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YOSEMITE AND ITS HIGH SIERRA



BY JOHN H. WILLIAMS



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On the Coulterville Road through Merced Grove of Big Trees.

ILLUSTRATED BOOKS BY JOHN H. WILLIAMS

“THE MOUNTAIN THAT WAS ‘GOD’”

“THE GUARDIANS OF THE COLUMBIA”

“THE CANOE AND THE SADDLE”

BY THEODORE WINTHROP

to which are now first added his WESTERN LETTERS
AND JOURNALS. Edited with an Introduction
and Notes by John H. Williams.

*"There is no death; love paid the debt;
Tho' moons may wane and men forget,
The mountain's heart beats on for aye;
Who truly loved us cannot die."*

And so I wait, nor fear the tide
That comes so swiftly on to hide
My little light. The mountains glow;
I have their promise, and I know.

—Richardson: *"The Promise of the Sierra."*



BY COURTESY OF THE BOHEMIAN CLUB

The Cañon of Yosemite.

Those mighty hills, so shadowy, so sublime,
As rather to belong to heaven than earth.—*Rogers.*

YOSEMITE

and its HIGH SIERRA

By JOHN H. WILLIAMS

Author of "THE MOUNTAIN THAT WAS 'GOD'"

"THE GUARDIANS OF THE COLUMBIA" etc.

WITH MORE THAN TWO HUNDRED ILLUSTRATIONS
INCLUDING EIGHT COLOR PLATES FROM
PAINTINGS BY CHRIS JÖRGENSEN



TACOMA AND SAN FRANCISCO

JOHN H. WILLIAMS

1914



The "Washington" and "Lincoln," Giant Sequoias in
Mariposa Grove.

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On the Summit of Clouds Rest, looking southeast over Little Yosemite and the Merced Cañon to Mt. Clark.

TO
THE SIERRA CLUB

THIS VOLUME ABOUT A NOBLE REGION
WHICH IT HAS LABORED TO CONSERVE AND MAKE ACCESSIBLE
IS CORDIALLY DEDICATED

Have you gazed on naked grandeur where there's
nothing else to gaze on,
Set pieces and drop-curtain scenes galore,
Big mountains heaved to heaven, which the blinding
sunsets blazon,
Black cañons where the rapids rip and roar?

* * * * *

Have you seen God in His splendors, heard the text
that Nature renders,—

You'll never hear it in the family pew,—
The simple things, the true things, the silent men
who do things?

Then listen to the Wild—it's calling you.

—Robert W. Service.



Starting for the Ascent of Mt. Lyell.



North Dome, Royal Arches and Washington Column, seen from the Merced River. The concentric formation in the granite, which is characteristic of the Yosemite region, is nowhere better shown. The imposing architectural aspect of this group, as if it were the ruins of some vast, decaying medieval cathedral, with crumbling arches and broken campanile, makes it the most interesting rock feature in the Valley.



The Half Dome, seen from the Overhanging Rock at Glacier Point, more than half a mile above the floor of Yosemite.

FOREWORD

The present addition to my series about the great mountains of the West will serve a happy purpose if it does no more than to gain new readers for the splendid books on Yosemite that have preceded it. One who follows in the footsteps of J. D. Whitney, Clarence King, Galen Clark, John Muir, and Smeaton Chase must needs enter upon his task with diffidence. Nevertheless, it is largely a new work that I have undertaken, namely, to describe and exhibit, not merely the famous Yosemite Valley, but the entire Yosemite National Park, so far as may be possible, by the aid of telling pictures. The field is so vast, its mountains, cañons, lakes, waterfalls, and forests are so important and spectacular, that even the unprecedented number of illustrations given here can only suggest its riches of wonder and beauty. In order to make room for the largest number of views, I have confined my text to those matters which persons visiting Yosemite for the first time may naturally wish to know,—an outline of the great physical features of the Yosemite country and their causes, the story of its native inhabitants and their worthy but pathetically hopeless fight to hold their alpine fastness, and the increasing facilities for the enjoyment of its renowned valleys and equally inviting highlands. I shall feel it no defect in this brief essay if among my readers some *Oliver Twist* may perchance ask for more!

The choosing of more than two hundred illustrations from many thousands of photographs involved no little labor. Much of the district was, until lately, very inadequately photographed. Yosemite Valley has long been the best illustrated scenic spot in America, but the wonderful High Sierra back of it has been surprisingly neglected by the professional photographers. Fortunately for this book, however, the large membership of the Sierra Club includes many expert amateurs, and the club's different expeditions into the mountains have produced a multitude of photographs that are equal to the best professional work. My first acknowledgment must therefore be to the photographers among my fellow-members for the unanimity with which they have placed their negatives at my disposal. Without such help, it would have been possible to show little more than the beaten paths of Yosemite Valley and the Big Tree Groves. I am also indebted to the passenger departments of the Southern Pacific, Santa Fe and Yosemite Valley Railways for many fine photographs; to the professional photographers, Messrs. Fiske, Pillsbury, Tibbitts, Boysen and others, for their interest and coöperation, and to Mr. M. M. O'Shaughnessy, City Engineer of San Francisco, for invaluable photographs of Hetch Hetchy.

Thanks are also due to the directors of the Bohemian Club of San Francisco for permission to reproduce Mr. Chris Jörgensen's spirited painting of Yosemite from Inspiration Point. The book is much enriched by this picture and by the others painted by Mr. Jörgensen especially for it.

Mr. William E. Colby, the Sierra Club's untiring secretary, has kindly read proofs, and aided me greatly with his expert counsel. Prof. C. A. Kofoed and Prof. Willis Linn Jepson, of the University of California, Rev. Joseph S. Swain, of Cambridge, Mass., Mr. Russ Avery, of Los Angeles, Mr. Mark A. Daniels, of San Francisco, Superintendent of the National Parks, Messrs. Herbert Bashford and Homer T. Miller, of the same city, Miss Mary A. Byrne, of the San Francisco Public Library, and Mr. John B. Kaiser, of the Tacoma Public Library, have made me their debtor by many courtesies. I must also thank the Houghton-Mifflin Company, of Boston; the Century Company, of New York, and the Blair-Murdock Company and Mr. A. M. Robertson, of San Francisco, for liberty to quote from copyrighted works of Muir, Burt, Chase, Symmes, Sterling and Richardson.

This book is an acknowledgment of a long-standing debt to the Sierra. Years ago, while a resident of California, I became a lover of her mountains. It has since been my good fortune to study other great mountain districts, and to learn that each has its own special inspiration; but on returning to the Yosemite upland after a decade of absence, I have still found in its nobly sculptured heights and gentle valleys a peculiar and lasting charm possessed by no other wild landscape, American or European, with which I am acquainted,—a mingling of sublimity and tenderness that should make it the joy of all Americans, and the best-guarded treasure of California.

“With frontier strength ye stand your ground;
With grand content ye circle round,
Tumultuous silence for all sound, . . .
Like some vast fleet,
Sailing through winter's cold and summer's heat;
Still holding on your high emprise,
Until ye find a home amid the skies.”

Tacoma, Nov. 15, 1914.



Jack Main Cañon and Willmer Lake, north of Hetch Hetchy Valley.



Lunch Time on the Tuolumne, at the Sierra Club's Camp near Soda Springs.

CONTENTS

I. THE YOSEMITE NATIONAL PARK	17
II. THE CAÑON OF YOSEMITE	61
III. ON THE CALIFORNIA SKY-LINE	93
IV. TUOLUMNE GRAND CAÑON AND HETCH HETCHY	115
V. THE "KING OF THE FOREST"	137
NOTES	143

ILLUSTRATIONS

The * indicates engravings from copyrighted photographs. See notice under the illustration.

FOUR-COLOR HALFTONES

From paintings by Chris Jørgensen.

The Cañon of Yosemite	By courtesy of the Bohemian Club	4
Cathedral Rocks and Spires		19
Yosemite Falls, seen from the Merced Meadows		24
Cascades at the Head of Happy Isles		41
Half Dome in the Alpen-Glow		60
Vernal Fall		77
Mt. Lyell and its Glacier		111
In Mariposa Grove		130

ONE-COLOR HALFTONES.

Title	Photographer	Page
On the Coulterville Road	S. A. Gray	2
"Washington" and "Lincoln" Trees, Mariposa Grove	H. C. Tibbitts	6
On the Summit of Clouds Rest	Pillsbury Picture Co.	7
Starting for the Ascent of Mt. Lyell	Pillsbury Picture Co.	7
Royal Arches and the Merced River	H. C. Tibbitts	8
Half Dome, from Overhanging Rock, Glacier Point	H. C. Tibbitts	9
Jack Main Cañon	J. F. Kinman	10
Lunch Time on the Tuolumne	Pillsbury Picture Co.	11
The Gates of Yosemite	Pillsbury Picture Co.	16
Regulation Peak and Rodgers Lake	J. F. Kinman	17

Title	Photographer	Page
Returning from Summit of Mt. Hoffman	Dr. Edward Gray	17
Upper Yosemite Fall	Arthur W. Wilding	18
Bridal Veil Fall	Pillsbury Picture Co.	20
Sentinel Rock (2)	Fiske and Pillsbury	21
A Glacier Landscape: Tuolumne Cañon	C. H. Hamilton	22
Another Glacier Landscape: Mt. Starr King, etc.	George R. King	22
El Capitan, from East Side	George Fiske	23
First View of Lyell and its Neighbors	Prof. Everett Shepardson	25
White Cascade, in Tuolumne River	Walter LeRoy Huber	25
Indian Grist-Mill	George R. King	26
Snow-Creek Falls	Lena M. Reddington	26
Three Brothers	H. C. Tibbitts	27
The Domes in a Winter Storm	Pillsbury Picture Co.	28
Two North-side Lakes (2)	J. F. Kinman	29
"Apron" and Glacial Tarn, in Little Yosemite	Hazel E. Roberts	29
Cathedral Peak	Walter LeRoy Huber	30
Dome at Head of Tenaya Lake	Pillsbury Picture Co.	30
View East from Glacier Point	J. T. Boysen	31
The "Governor Tod" Group	Pillsbury Picture Co.	32
A Study in Clouds and Mountains	Clinton C. Clarke	33
Buttercups Following Retreat of the Snow	Clinton C. Clarke	33
Washburn Lake	J. T. Boysen	34
North Dome, seen from Happy Isles	H. C. Tibbitts	34
The Tuolumne Grand Cañon	Walter LeRoy Huber	35
The Terraced Walls of Hetch Hetchy	Pillsbury Picture Co.	36
Giant Sequoias at Cabin in Mariposa Grove	H. C. Tibbitts	37
View South from Kuna Crest	Walter LeRoy Huber	38
White Firs on Eagle Peak Trail	Prof. George J. Young	38
Mt. Dana, seen from Tioga Lake	H. E. Bailey	39
Sugar Pine Loaded with Cones	George R. King	40
Crossing Cold Cañon Meadows	Ruth I. Dyar	40
View down from Clouds Rest	J. T. Boysen	42
Yosemite Squaw, with Papoose	J. T. Boysen	43
Polemonium near Parker Pass	Rose M. Higley	43
Mono Pass; with Bloody Cañon and Mono Lake (2)	Francis P. Farquhar	44
*Happy Hours! (Deer in the Park)	J. T. Boysen	44
Sardine Lake in Bloody Cañon	J. T. Boysen	45
Mt. Hoffman, from Snow Flat on the Tioga Road	Philip S. Carlton	45
Yosemite Valley, seen from Yosemite Falls Trail	George Fiske	46
Distinguished Visitors to the Grizzly Giant	Pillsbury Picture Co.	46
Western End of Yosemite, from Union Point	George Fiske	47
Indian Acorn Cache	H. C. Tibbitts	48
Tenaya Peak, with Tenaya Lake	Pillsbury Picture Co.	48
In Tenaya Cañon (2)	Prof. J. N. Le Conte	49
Tenaya Lake	J. T. Boysen	50
Gates of Tenaya Cañon in Winter	George Fiske	51
South Merced Valley, from Lookout Point	J. T. Boysen	52
A Yosemite Wood-Gatherer	George Fiske	52
Mirror Lake and Mt. Watkins	Pillsbury Picture Co.	53
Yosemite Indian Basket-Maker	J. T. Boysen	54
"Umbrella Tree"	George Fiske	54
Wild Flowers beneath the Royal Arches	Pillsbury Picture Co.	55
The "Forest Queen" in the Mariposa Grove	J. T. Boysen	56
*"Watch Me!" (Bear Cub)	J. T. Boysen	56
*On the Overhanging Rock in Winter	Pillsbury Picture Co.	57
Blue Jay in Merced Cañon	Prof. Everett Shepardson	57
John Muir in Hetch Hetchy	George R. King	58
Ready for the Trails	H. C. Tibbitts	58
Tenaya Cañon and Half Dome, from Glacier Point	George Fiske	59
Merced River and the Forest in Yosemite	H. C. Tibbitts	61
Lost Arrow Trail	H. C. Tibbitts	61
Chilnualna Falls, near Wawona	J. T. Boysen	62
"New England Bridge," at Wawona	George Fiske	62
Bridal Veil Meadow	H. C. Tibbitts	63

Title	Photographer	Page
On Wawona Road	George Fiske	63
The Merced River above El Portal	Pillsbury Picture Co.	64
Cascade Falls	J. T. Boysen	65
Bridal Veil Fall in Early Winter	George Fiske	66
Winter Sports in Yosemite	Philip S. Carlton	66
El Capitan and Three Brothers	Pillsbury Picture Co.	67
A Glimpse of North Dome	George Fiske	67
North Wall of Yosemite Valley	Pillsbury Picture Co.	68
Panoramic View East from Washburn Point	Pillsbury Picture Co.	68
Cathedral Rocks and Spires	Pillsbury Picture Co.	69
The "Back Road," South Side of Yosemite	George Fiske	70
Yosemite Falls, seen from North-side Trail	Pillsbury Picture Co.	71
Cliff at Head of Yosemite Falls	U. S. Geological Survey	72
Leopard Lily	Arthur W. Wilding	72
Evening Primroses and the Half Dome	Pillsbury Picture Co.	73
Ice Cone at Upper Yosemite Fall (2)	George Fiske	74
Overhanging Rock at Glacier Point	George Fiske	75
Glacier Point Jutting into Yosemite	Pacific Photo and Art Co.	76
*Illilouette Fall	Pillsbury Picture Co.	78
The Merced at Happy Isles (2)	Pillsbury Picture Co.	79
Le Conte Memorial	George Fiske	80
The "Fallen Monarch"	U. S. Forestry Bureau	80
Vernal Fall, from Clark's Point	George Fiske	81
Vernal Fall in Winter	George Fiske	82
At the Head of Nevada Fall	W. J. Grow	82
The "Cataract of Diamonds"	Pillsbury Picture Co.	83
Little Yosemite, from Liberty Cap	Pillsbury Picture Co.	83
Nevada Fall (2)	Pillsbury Picture Co.	84
Little Yosemite, with Clouds Rest	George Fiske	85
Sugar-Loaf Dome, in Little Yosemite	George Fiske	85
Climbing the Half Dome (2)	R. O. Quesnal	86
Overhang at Summit of Half Dome	R. O. Quesnal	87
Phlox	Pillsbury Picture Co.	87
Half Dome at Sunrise	Violet Ehrman	88
On the "Short Trail" to Glacier Point	Pillsbury Picture Co.	88
Lake Merced	J. T. Boysen	89
A Characteristic Dome Landscape	Pacific Photo and Art Co.	90
Sentinel Dome	George Fiske	90
Jeffrey Pine on Sentinel Dome	Pillsbury Picture Co.	91
Aspen Forest at Lake Merced	W. W. Lyman	92
Triple Divide Peak	William Templeton Johnson	93
Climbing Mt. Clark	F. R. v. Bichowsky	93
Tuolumne Pass (2)	Clair S. Tappaan and Dr. Edward Gray	94
On Lake Washburn at Sunset	W. W. Lyman	94
Vogelsang Pass and Vogelsang Peak	Pillsbury Picture Co.	95
View South from Vogelsang Pass	Pillsbury Picture Co.	95
Summer Snowfields in the Sierra (3)	Charles W. Michael	96
Cathedral Peak, from Cathedral Pass	J. Floyd Place	97
Looking up Lyell Fork of the Tuolumne	Prof. Everett Shepardson	98
Pack Train at Vogelsang Pass	Pillsbury Picture Co.	98
Kuna Crest, from Meadows near Mono Pass	Rose M. Higley	99
Mountain Hemlocks	Ruth I. Dyar	99
In Alpine California (2)	Prof. E. Shepardson and F. P. Farquhar	100
Cutting Steps up Snow-Finger on Mt. Lyell	Walter LeRoy Huber	100
Luncheon on Lyell Summit	Pillsbury Picture Co.	101
Sierra Club Climbing Mt. Lyell	Pillsbury Picture Co.	101
Rodgers, Electra and Davis Peaks	J. Floyd Place	102
A Convenient Crack	Clinton C. Clarke	102
Summit of Mt. Lyell	Prof. Everett Shepardson	103
The "Bergschrund" of Lyell Glacier	H. E. Bailey	104
The Uplands in July: Echo Peak from Unicorn	Francis P. Farquhar	104
Mts. Dana and Gibbs (2)	Ruth I. Dyar	105
The Craters of Mono County	J. T. Boysen	105
Summit of Mt. Conness (2)	F. R. v. Bichowsky	106

Title	Photographer	Page
Cathedral Peak Range, from Tuolumne Meadows	Philip S. Carlton	107
Tenaya Lake, from Old Tioga Road	Pillsbury Picture Co.	108
Lambert Dome and Tuolumne Meadows	Pillsbury Picture Co.	108
Matterhorn Cañon, from its East Slope	Ruth I. Dyar	109
The Hammond Fly-Catcher	Rose M. Higley	109
View East, from Benson Pass	Walter LeRoy Huber	110
Snow Plant	J. T. Boysen	110
Mts. Ritter and Banner, from Shadow Lake	Walter LeRoy Huber	112
Group of 250-foot Sequoias	U. S. Forestry Bureau	113
Nearing the Summit of Mt. Lyell	Pillsbury Picture Co.	113
Piute Mountain and Lakelet in Seavey Pass	C. H. Hamilton	114
A Typical Glacial Cirque	U. S. Geological Survey	114
Upper Hetch Hetchy, from Le Conte Point	Walter LeRoy Huber	115
Coasting on the Granite	Pillsbury Picture Co.	115
Lower End of Tuolumne Meadows, from Lambert Dome	Ruth I. Dyar	116
Cathedral Creek Falls	Robert L. Lipman	116
Glen Aulin and Wildcat Point	Philip S. Carlton	117
Spermophiles at Conness Creek	Ruth I. Dyar	117
Tuolumne Falls	Walter LeRoy Huber	118
Grand Cañon of the Tuolumne River	Walter LeRoy Huber	119
Largest of the Waterwheels	Francis P. Farquhar	120
A Fair Knapsacker	Lucile R. Grunewald	120
Waterwheel Falls, Tuolumne Cañon	Francis P. Farquhar	121
Benson Lake (2)	Prof. Ralph R. Lawrence	122
Cookstoves on the March	Ruth I. Dyar	122
Rodgers Lake	Rose M. Higley	123
Heart of Tuolumne Cañon; Entrance to Muir Gorge (2)	Francis P. Farquhar	124
*Lower End of Muir Gorge	Francis M. Fultz	125
Little Hetch Hetchy	John S. P. Dean	126
Weighing the Dunnage	Elizabeth Underwood	126
River, Meadow and Forest, in Hetch Hetchy	Pillsbury Picture Co.	127
Waterfalls and Cascades in Tuolumne Cañon	Pillsbury Picture Co.	127
Sunrise in Hetch Hetchy	Rose M. Higley	128
Unnamed Lake in Eleanor Cañon	J. F. Kinman	128
The "Twins"	Walter LeRoy Huber	129
Five-Finger Falls, in Hetch Hetchy	Walter LeRoy Huber	131
Lake Eleanor	J. F. Kinman	131
Central Hetch Hetchy	Taber Photo Co.	132
Upper Hetch Hetchy	H. B. Chaffee	133
Yellow Pines	George Fiske	134
Overhanging Rock at Eleanor Cañon	Robert Schaezlein, Jr.	134
Lower Hetch Hetchy	H. B. Chaffee	135
A Contemporary of Noah: the "Grizzly Giant"	H. C. Tibbitts	136
Cavalrymen at Cabin in Mariposa Grove	Pillsbury Picture Co.	137
A Fish Story from Laurel Lake	J. F. Kinman	137
Wawona Meadows and South Merced Valley	J. T. Boysen	138
Red Fir	Meyer Lissner	139
"Alabama," in the Mariposa Grove	J. T. Boysen	139
Maul Oak, on Wawona Road	H. C. Tibbitts	140
Mariposa Lily	Prof. Ralph R. Lawrence	140
The "King of the Forest" (2)	Walter LeRoy Huber	141
Three Veterans	E. N. Baxter	142
Del Portal Hotel, at El Portal	J. T. Boysen	143
Camp Curry (2)	Pacific Photo and Art Co.	144
Watching the Sunrise at Mirror Lake	Pillsbury Picture Co.	145

MAPS

From Yosemite Valley to Wawona and Mariposa Grove, Drawn by Chris Jörgensen	146
Travel-Guide Map, Yosemite National Park. U. S. Geological Survey, Inside Back Cover	
Yosemite Valley. Drawn by Chris Jörgensen	Inside Back Cover



Regulation Peak (el. 10,500 ft.), and Rodgers Lake, the best known of many beautiful mountain lakes in the northern part of the Park.

YOSEMITE AND ITS HIGH SIERRA

I.

THE YOSEMITE NATIONAL PARK

God of the open air,
 To Thee I make my prayer. . .
 By the breadth of the blue that shines in silence o'er me,
 By the length of the mountain lines that stretch before me,
 By the height of the cloud that sails, with rest in motion,
 Over the plains and the vales to the measureless ocean
 (Oh, how the sight of the things that are great enlarges the eyes!),
 Lead me out of the narrow life to the peace of the hills and the skies.

—Henry Van Dyke.

THE Yosemite Country invites all lovers of the thronging mountains. It offers the enjoyment of a landscape famous for its elements of surprise and wonder. It promises the lasting interest of upland grandeur, softened by the beauty of lake and forest, flowers and falling waters. A land of superlatives, it may truthfully boast the most splendid high-walled valleys, the loftiest cataracts, the oldest, stateliest, and most noteworthy trees, in the world. It multiplies the delights of mountaineering with the most equable of sunny mountain climates. Finally, —and this is its loudest call to thousands of true nature-lovers,—it presents a legible



Returning from the Summit of Mt. Hoffman.

Here the glacier ground the
stone,
Here spake God and it was
done;
Buttress, pinnacle and wall.
River, forest, waterfall,
And God's right hand over
all.
Hear the mountain torrents
call,
Swung colossal from the
steep;
See them, wind-tossed, wave
and sweep;
Hear them sound like harp-
er's hands
On the quivering granite
strands,—
Now with thunderous thud
and moan,
Now with giant undertone;
While the pine trees whis-
per low,
And the sunset's shadows
slow
Up the vast gnarled ridges
go
To the roseate far snow.

—Rev. Joseph Cook:
"Yosemite."



THE GATES OF YOSEMITE.

"Soon, quitting the narrow, cluttered wilderness of the lower river, the newcomer is face to face with the ordered peace and glory of the Enchanted Valley. Here, fully spread before him, is that combination of sylvan charm with stupendous natural phenomena which makes Yosemite unique among Earth's great pictures. He sees the cañon's level floor, telling of an ancient glacial lake that has given place to wide, grassy meadows; fields of glad

mountain flowers; forests of many greens and tinctures; the fascination of the winding Merced; and, gleaming high above this world of gentle loveliness, the amazing gray face of El Capitan, while Pohono drops from a 'hanging valley' superbly sculptured, and so beautiful that he may well deem it the noblest setting Nature has given to any of her famous waterfalls."—P., 66.

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Upper Yosemite Fall, seen from Yosemite Point Trail. In its drop of 1,430 feet, the stream, even at flood, becomes a cloud of spray, which the wind catches as on a cushion, and sways from side to side.

and absorbing record of the making of great scenery.

It is a commonplace of foreign visitors of the boulevard type, and of some Americans who know the towns and spas of Europe better than the glory of their own land, that the mountain scenery of Western America is a scenery of mere savage bigness, rather than of predominant beauty. This easy complaint may be charged in good part to our modern demand for luxury, and will be forgotten with the multiplication of automobile roads and expensive hotels. A fashionable inn on its summit has made many a third-rate hill in Europe the goal of spell-bound tourists, including droves of our globe-trotting fellow-countrymen. Nevertheless, the trite criticism has in it a half-truth. It is true of the Rocky Mountain and Sierra systems to the same extent that it is true of the Swiss plateaus supporting the great snow-peaks, or the Tyrolese uplands, or the cirque country of the Pyrenees. The beauty of such scenes is not to be measured on the scale of country estates and well-trimmed pastoral landscape.

High mountain lands but lately abandoned by ice-sheet and glacier wear similar aspects the world over. They are the seats of sublimity rather than of the picturesque. Their fascination lies not so much in softness of detail as



Cathedral Rocks and Spires.

... There the sun himself,
At the calm close of summer's longest day,
Rests his substantial orb; between those heights
Sparkle the stars, as of their station proud.—*Hordsworth.*



Bridal Veil Fall, the Indian Pohono. Dropping 620 feet, with 200 feet of cascades below it, this fall is noteworthy in its setting, and perhaps the most graceful in form of all the Yosemite cataracts. Note the "comets"—arrow-like masses of water shooting out from the fall.

in breadth of view, in strength of line and majesty of form. They conjure with a story of their master sculptor, the Sun, wielding vast tools of ice and snow and rushing torrent, to block out peak and range, to lay broad glacial valleys deep with soil, to plant the highland lakes, and to smooth the wide rock benches, which, even yet unweathered, refuse welcome to forest or farm.



Sentinel Rock, seen from the east and west—the great, glacier-carved cliff rising 3,086 feet on the south side of the valley, opposite Three Brothers. The perpendicular front of the Sentinel, sheer for half its height, shows how the cleavage has followed vertical jointing in the granite.

In such alpine regions, whether of Europe or America, the real out-door man needs no handbook of science to interpret their report of elemental forces, busy until comparatively recent time. Nor does the wildness of their scenes, or the slight effort needed to attain them, weigh against



A Glacier Landscape: Tuolumne Cañon, where many thousands of years ago, the great Tuolumne Glacier left its record in the deep trough and polished granite slopes.

the inspiration which he prizes more than comfort. He is not offended by the absence of those sylvan graces common only to the older lowlands. And if, happily, prodigal Nature, in her bounty, should set down a delightful picture of gentler beauty in the midst of her mountain grandeurs, he appraises it the more justly for its mighty surround-

ings. The ancient hills, he knows, are man's oldest and unfailing friends; their service, past and present, in making the earth inhabitable calls for his tribute; and year after year finds him returning with joy to learn their lessons and receive their strength. As Maxwell Burt gaily sings,—

There is no good denying it,
If you be mountain born,
You hear the high hills calling
Like the echo of a horn;
Like the echo of a silver horn that threads the golden day,
You hear the high hills calling, and your heart goes away.

The character and accent of mountain landscape at its best distinguish the whole of the Yosemite National Park. Its area of 1,124 square miles



Another Glacier Landscape: The domes of Mt. Starr King (right), with the Mt. Clark group and its cirques beyond, forming the Illilouette water-shed.



El Capitan (the Captain), with early morning sunlight on its east face. One needs the aid of figures to appreciate the magnitude of this vast block of unjointed granite. The brow of El Capitan is 3,100 feet above the Merced River; its actual summit is 500 feet higher. Each face of the cliff exceeds 160 acres in area. A lone tree growing on a ledge under the arch seen in the shadow on the right is more than eighty feet high.



Yosemite Falls, seen from the Merced Meadows.

The cataracts blow their trumpets from the steep; . .

I hear the echoes through the mountains throng,
The winds come to me from the fields of sleep.

—Wordsworth.



First View of Lyell and its Neighbors, from the Lyell Fork of the Tuolumne. Mts. Lyell and McClure are seen on the sky-line, right of center.

combines the most rugged wildness with innumerable scenes of composed beauty. Extending from an average elevation of 4,500 feet on its western boundary to the snowy summits of the Sierra Nevada Range, at more than 13,000 feet, it includes the watersheds of two important rivers, the Merced and the Tuolumne, and embraces a variety of upland scenery unequaled in any other of our national parks.

Each of these great public outing grounds has its own especial interest: the Colorado Grand Cañon, its vast gorge, with an infinite variety in the forms and coloring of the river-sculptured rock; the Rainier Park, its single volcanic peak, imposing beyond other American mountains, snow-crowned, and radiating a score of huge glaciers down its densely forested slopes; the Yellowstone, its wonderful thermal basins and their geysers; the new Glacier Park, like the still grander Canadian Rockies near by, a wealth of snow-peaks, glaciers, and



The White Cascade, in Tuolumne River at Conness Creek Basin.



Indian Grist-Mill. An important article of Sierra Indian diet was meal made by pounding black oak acorns in rude mortars in the granite. The meal was bleached with hot water to remove the bitter taste, and baked into hard cake by dropping heated stones into cooking baskets containing the paste. Such acorn bread is still made by the Indians.

Such a record holds, inevitably, far greater value and concern for us than the glaciers themselves could ever have had. The gray granite cañons which the ice-streams dug are as deep as that in the Arizona sand-stones. Though less gorgeously colored, they are quite as wonderful in the carving of cliff and wall. But they have other interest found nowhere else in equal degree. Glorious waterfalls, flung banner-like from the sheer cañon sides, tell of complex systems of branches. These radiated like a family tree from the trunk glaciers. All were bent to denude the Sierra slope of its sedimentary rocks, and dissect the underlying granites with hundreds of cañons, gorges, and valleys. Some thousands of years ago, the glaciers retreated slowly back upon the heights of the range. Each of the larger troughs thus abandoned bore proof of its glacial origin. Instead of the even grades of stream-cut cañons, they presented the form of giant stairways, down which the glaciers had moved majestically, to yield at last to the then tropical heat of the lower valleys. In this de-

beautiful lake-strewn valleys.

The Yosemite Park has no geysers. Its former mighty ice-sheets have now shrunk to a few pygmy glaciers, sheltered on the north slopes of the highest peaks. These are mere shadows of the ancient glaciers, which left the story of their extent and work clearly written upon what is doubtless the most fascinating glacial landscape in America.



Snow-Creek Falls, on Tenaya Lake Trail.



Three Brothers, an imposing mass of granite which the inclined joint-planes enabled the glaciers to carve into triple gables. The name was given in 1851 to commemorate the capture here of the Yosemite chief Tennyah. The Indian name, however, was "Kom-pu-pai-zes," or Frogs' Heads. Eagle Peak, the highest of these cliffs, rises 3,800 feet above the Merced, which is seen in the foreground.



The Domes in a Winter Storm, with snow blowing from the heights overlooking Tenaya Cañon.

scent, the ice carved steps in its path, varying in height and breadth with its own varying mass and the character and jointing of the rock. On these steps hung a multitude of cataracts, and their deeply cupped treads held hundreds of high-walled lakes.

The passing centuries have greatly relieved the primitive wildness of this glacial landscape.

Forests as important as those of the Rainier Park, and perhaps even more beautiful in their universal mingling of sunshine and shade, have covered the upland moraines and soil beds laid

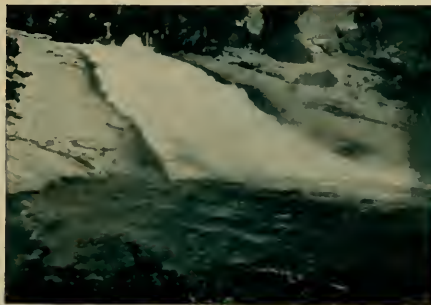


Two North-side Lakes. Upper Twin Lake, above, is at the head of Eleanor Creek, and forms part of the Lake Eleanor system. Below is Tilden Lake, with Tower Peak (11,704 ft.) in the central distance, and Saurian Crest on the left.

by the ice. Many of the waterfalls on the cañon stairways have cut through

their ledges, and become even more picturesque as cascades. While scores upon scores of the fine glacial lakes still remain—and a larger book than this would be required to describe and exhibit the notable lakes of the Yosemite Park,—many others have been filled by stream deposit, profitably converting bare water areas into delightful mountain vales. Such is Nature's art.

Here our debt to the glaciers reaches its climax. For among the filled lake basins made possible by their mighty sculpturing are the valleys of Yosemite and Hetch Hetchy, the chief glories of the entire Park. By the height and grandeur of their walls, the unequalled majesty of their cataracts, the charm of their level floors, and the variety and interest of their forests and mountain wild flowers, these famous valleys claim place among the pre-eminent treasures, not only of California,



"Apron" and Glacial Turn on Lakelet, on the Merced at head of Little Yosemite.



Cathedral Peak (el. 10,933 ft.), a prominent landmark on the divide between the Merced and Tuolumne watersheds.

but of all America. They are part of our great national heritage,—part, indeed, of “those higher things among our possessions,” as Prof. Lyman has said, “that cannot be measured in money, but have an untold bearing upon the finer sensibilities of a nation.”

Let no one, however, who knows only these renowned valleys imagine that he has won his due share of Yosemite’s inspiration. His birthright of beauty and grandeur here is something far more worth while. The two great valleys are of course magnificent, and each day spent in them, or in climbing their walls, will bring new rewards. But I am sorry for those who go no farther; who cannot spend a few days, at least, back in the upper country of the Merced or Tuolumne, among the lakes and shining granite domes of the

highlands. Even though they may climb no peaks, the high mountains will welcome them to sit at their feet, share their gentler sunshine and broader outlook, breathe their diviner airs, learn the joy of the upland trails, and know that the best of Yosemite lies far from the crowds of Yosemite Valley. Happily, this is now to be made easy, even for the “tenderfoot.”

For the Yosemite country is a picture of contrasts and harmonies that make a perfect whole. It is not to be known by its famous valleys only. These are but the enchanting foreground of our scene, and gain vastly by the dignity and austerity of their high mountain setting. Viewed separately, the valleys, splendid as they are, do not make the picture, any more



Dome at Head of Tenaya Lake. Note the large tree growing halfway up the slope.



View East from Glacier Point. Below, in the Merced Cañon, are Vernal and Nevada Falls, with Liberty Cap, a quarter dome, rising a thousand feet above the latter fall. The granite slopes of Little Yosemite are seen beyond. Mt. Clark, the "Obelisk," tops the sky-line on the right, and Mt. Florence on the extreme left.

than Millet's two figures bent in prayer make the "Angelus." We need to know the background in order to get the true values of the foreseen. And only so, indeed, can the highly sensational features of the valleys themselves, and their ancient story, be understood. Yosemite Valley and its sister cañon of Hetch Hetchy, with their lesser replicas in different parts of the Park, are all inseparable, geologically, from the High Sierra back of them.



The "Governor Tod" Group, one of the finest in the Mariposa Grove.

The "dropped-block" theory of their origin has long been abandoned. They are linked by the vanished glaciers with the snow-peaks.

Thus our Yosemite picture, both scenically and historically, looks back of necessity from the warmth of its lowland grandeur to the wild sublimity of bleak highlands, till recently the home of perennial frost. Even here are startling surprises for one who expects no beauty on the ice-swept heights. The stern sculpturing of pinnacled granite crags that dot the wide plateaus is no more characteristic of the landscape than is their flora. Outposts of the forests, huddled clumps of lodgepole and white-bark pine, are everywhere bravely scaling the ridges. Throngs of hardy mountain flowers, most brilliant of Nature's children, crowd all the ravines and lakesides, and seize upon every sheltered nook. The shallowest pretense of soil, weathered



A Study in Clouds and Mountains. View east from the summit of Lambert Dome. Beginning on the left, the peaks seen here are Dana, Gibbs and Mammoth. The cloud scenery of the Sierra is as characteristic and impressive as its landscape.

from the somber granites, is sufficient invitation. The short alpine summer is long enough for their modest needs. Boldly they rush the season, edging away the tardy snow-banks, and calling on Old Winter to be up and going. Hardly waiting for his departure, at once they set about their business of hiding the glacial scars with masses of gay color. This ministry of beauty begins at the very snow-line, and grows as flowers and forest march together down to the sunny glacial meadows, and on to the still older valleys of the Sierran middle zone, deep with soil, and glowing in the long summer.

Eager as Nature has been to plant the broad Yosemite uplands with flowers and trees, she has scattered other wonders here with even greater extravagance. Almost everything is on a scale of surprise. Nowhere else in America are highland lakes so plentiful or their settings more superb. The giant cataracts of Yosemite Valley dwarf a hundred other great waterfalls and cascades in the Park. These are hardly noticed here, but any one of them, could it be removed to Switzerland, would become a center of crowded



Buttercups Following Retreat of the Snow. This is the custom of many early flowers, near the timber line.



Washburn Lake (7,640 ft. el.), on the Merced River above Lake Merced. Long Mountain (11,468 ft.), on the crest of the Sierra, is seen in the distance.

tourist inns. The Park's genial forests of white and red firs, sugar and yellow pines, incense cedars and mountain hemlocks, spreading up to altitudes of eight and nine thousand feet, thrill every lover of splendid trees. But these are overshadowed by its groves of kingly Sequoias, the marvel of the botanical world,—immemorial trees that might have heard blind Homer

sing the fall of Troy, or furnished the timbers for Solomon's temple.



North Dome, seen from Happy Isles.

Colossal this landscape is, but its features are so well proportioned that in their immensity we feel no exaggeration or distortion. Only when the visitor compares them with more familiar objects does he clearly see that here, truly, is a playground



The Tuolumne Grand Cañon, viewed from its north wall, above Muir Gorge, the top of which is seen in the lower right-hand corner of the picture. Colby Mountain, named in honor of the Secretary of the Sierra Club, rises beyond, a mile in height above the river. Grand Mountain is near the center of the sky-line, with Cathedral Creek Cañon at its foot, and Falls Ridge between Cathedral Creek and the Tuolumne. Kinn's Crest is seen in the distance on the left.

fashioned for giants. The very harmony of its elements makes us slow to grasp the full majesty of the whole. To know Yosemite well is the study of a lifetime,—labor well repaying the student, as John Muir has found it. We may not quickly learn all its magic, though even the newcomer yields to its spell. He comes again and again who would know its mysteries. If Yosemite were of Greece, how inevitably legend, seeking the clue to such perfection of beauty, must have peopled it with gods!

The Indians of the Sierra, however, were seldom builders of myths.



The Terraced Walls of Hetch Hetchy, seen from granite bar in center of the Valley near its lower end. Kolana Rock on right and North Dome on left rise more than 2,000 feet above the meadows and forests of the Valley floor.

Stolid and unimaginative beyond most of their brethren, they saw in their mountains only homes, sustenance and defense. Superstitions and devillore they had in plenty. One of their tales, for example, concerned Yosemite Valley, their "Ah-wah-nee," meaning a deep grassy vale. Ah-wah-nee, they told the whites, was the abode of demons, at whose head was the great Tu-tock-ah-nu-lah, the "Rock Chief," which we have translated into current usage in the Spanish "El Capitan." His ominous face could be seen in the side of a vast cliff, threatening invaders of his domain. But one suspects that this naïve legend may have been invented for a timely purpose.



Giant Sequoias at the Cabin in Mariposa Grove.



View South from Kuna Crest, showing Mts. Lyell, McClure and Florence on the distant sky-line, with Potter Point and Parsons Peak in center, beyond Lyell Fork Cañon.

The Indian tradition of Yosemite is too much attenuated by the years, and adulterated by the fancies of white writers, to permit the acceptance of



White Firs (*Abies concolor*), on the Eagle Peak Trail. This tree, so named because of its light gray bark, is common throughout the Park at 5,000 to 7,000 feet, giving place to the Red Fir, which abounds at altitudes up to 9,000 feet.

many so-called Indian legends of present-day publication. But even these ascribe to the aborigines here no such veneration for the great peaks, the wonderful cata-racts, and other superlative forms of nature as among primitive men elsewhere clothed them with power over human lives, or amounted to worship. Nor does it appear that their speculation undertook seriously to explain these phenomena by a mythology such even as grew up in the Northwest, where the legends of the "Bridge of the Gods" and the "Battle of the Winds" on the Columbia River, the Puget Sound



Mt. Dana (13,050 ft.), seen from Tioga Lake, on its northwest slope.



Sugar Pine (*Pinus lambertiana*), loaded with cones. This tree, king of all the pines, is noted for its fine cones, twelve to twenty inches long.

would surely punish their intrusion into his Ahwahnee. The white tide was rolling steadily across the plains to the Pacific. A wave had swept up the coast from Mexico; all lowland California was inundated. The mountain Indians had no wish to be "civilized" as their valley cousins had been. Hence even as early as 1833, long before the discovery of gold and the rush of miners to the foothills, Captain Joseph Walker, the first white man to lay eyes upon the Yosemite country, was carefully warned by his Indian guides away from the great valleys, and made to keep his course on

folk-tale of the "Miser of Tak-homa," and the like show the Indian's restless mind allying Nature with his daily life, and seeking curiously to unravel her problems. For the Yosemite Indian, the unknown darkness held only ghosts and witches. His mountains gave him no vision. Yet they supplied him with a place to live in comfort and aboriginal luxury. They provided him with acorns, nuts, game and other food. They enabled him to hide in pathless cañons, where pursuit was impossible, and from the walls of which he might roll down rocks upon any who should attempt to penetrate his mountain fastness.

It is not surprising, therefore, that our first native tradition of the Yosemite represents the Red Man as telling white trespassers that Tutockahnulah



Crossing Gold Cañon Meadows, on trail between Conness Creek and Virginia Cañon. This is a typical filled glacial lake. There are hundreds of such broad, shining upland meadows in the Park, each a park in itself, carpeted with the finest grass and brilliant with alpine flowers.



Oh, the mountain music of the Happy Isles!
There cool winds are singing,
And crystal waters flinging
Their diamond dancing laughter about the Happy Isles.
—Harold Symmes.

Cascades at the Head of Happy Isles.



Looking Down into Yosemite from the Western Slope of Clouds Rest. On the right are seen Tenaya Cañon, North Dome and the top of Washington Column, with El Capitan in the distance; on the left, Half Dome and the profile of Glacier Point.

the divide between the Merced and Tuolumne. And when the gold-hunters came, a notable figure, if California furnished any notables to the roll of Indian history, arose on behalf of his diminished tribe to dispute their advance into the beloved cañon. Tenaya, the Yosemite chief, is the most memorable and picturesque native leader in the annals of the state.

The actual discovery of this Indian stronghold is a matter of some debate. Whether it was Walker, in '33, or Savage's frontier militia of '51, that first looked down into the vast Yosemite gorge may never be established. Each expedition, however, is part of our story.

History has done scant justice to Joseph Reddeford Walker. He belonged to that small group of intrepid frontiersmen who did much but wrote little, and whose achievements have been ignored through their own neglect of fame and the claims of more ambitious rivals. Walker's failure to publish his discoveries, and the fact that he served under a jealous commander, who was even capable of claiming them for his own, have combined to obscure his work. That he led a party of Bonneville's men in the first exploration westward from "the Great Salt Lake;" that he disproved the then accepted belief that that lake drained into the Pacific; that he established the existence, extent and character of the Great Basin; that he charted its rivers and lakes ending as they begin in the desert; that he discovered and was the first to cross the Sierra Nevada Range, entering Alta California through the Mono Pass and leaving it the next year, 1834, by the route since known as Walker's Pass;— here, surely, was a real "pathfinder," worth a clear and permanent page in Western history!

Walker concerns us, not only because he was the first white visitor to the Yosemite region, but especially because the claim is now made by his family and others that he "discovered and camped in Yosemite Valley." The evidence available hardly seems to sustain this claim in full.

On the stone over Walker's grave in Alhambra Cemetery, at Martinez, Cal., is this



Yosemite Squaw, with Papoose and Baby Basket.



Polemonium (P. eximium), at 12,000 ft., near Parker Pass. This darling blue perennial seeks the highest slopes.

line, said to have been placed there on authority of Captain Walker himself: "Camped at Yosemite, November 13, 1833;" and Munro-Fraser's "History of Contra-Costa County," published in 1882, six years after

Walker's death, contains a sketch of the explorer, quoting his nephew, with whom he spent his last years, and saying: "His were the first white man's eyes that ever looked upon the Yosemite, which



Above, Mono Pass (el. 10,599 ft.), looking west, with Mammoth Mountain and Kuna Crest on left. Below, Bloody Cañon and Walker Lake, with Williams Butte and Mono Lake beyond.



he then discovered, although the honor has been accorded to some other person at a period twenty years later." Thus it is

seen that the present claim goes somewhat beyond the testimony of Walker and his nephew. We may accept "Camped at Yosemite," but are we warranted in assuming that "at" means "in"?

On the contrary, Dr. L. H. Bunnell, who was of the Savage party visiting the valley in 1851, and who named it "Yosemite," says in his well-known book, "Discovery of the Yosemite" (4th ed., pp. 38, 39):



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Happy Hours! Deer are a familiar sight everywhere in the upland forests and meadows of the Park.

I cheerfully concede the fact * * * that "his were the first white man's eyes that ever looked upon the Yosemite" above the valley, and in that

sense he was certainly the original white discoverer.

The topography of the country over which the Mono trail ran, and which was followed by Capt. Walker, did not admit of his seeing the valley proper. The depression indicating the valley, and its magnificent surroundings, could alone have been discovered, and in Capt. Walker's conversations with me at various times he was manly enough to say so. Upon one occasion I told Capt. Walker that Tenie-ya had said that "a small party of white men once crossed the mountains on the north side, but were so guided as not to see the valley proper." With a smile the captain said: "That was my party, but I was not deceived, for the lay of the land showed there was a valley below; but we had become nearly barefooted, our animals poor, and ourselves on the verge of starvation, so we followed down the ridge to Bull Creek, where, killing a deer, we went into camp."



Sardine Lake, filling a glacial cirque in Bloody Cañon, below Mono Pass.

Again, on p. 78, Dr. Bunnell says Walker told him that "his Ute and Mono guides gave such a dismal account of the cañons of both rivers that he kept his course near to the divide,"—that is, between the Tuolumne and the Merced. With no other chronicle of this first expedition, Bunnell's quotations from Walker and the Yosemite chief enable us to see the weary



Mt. Hoffman, from Snow Flat, on the Tioga Road. This mass of granite ramparts is the crest of the divide between Yosemite Valley and the Tuolumne.

explorers struggling up the steep defile of Bloody Cañon from the volcanic Mono plain, descending the long western slope, half starved, and floundering through the untracked snow of November on the divide, to reach at last the sunshine and comfort of the provincial capital, Monterey. Probably Walker's route was much the same as that of the later Tioga Road. The Indians had kept the secret of their warm Yosemite home.

We must conclude, I think, that while Walker



Eastern End of Yosemite Valley, seen from Yosemite Falls Trail, near foot of the Upper Fall. Beginning with Glacier Point on the right, the sky-line shows successively Mt. Starr King, the Mt. Clark group, Half Dome, and North Dome.

first traversed the Yosemite uplands, and was, in that sense, as Bunnell admits, "the original white discoverer," the honor of first visiting the floor of the valley and making known the majesty of its walls remained for the



Distinguished Visitors to the Grizzly Giant. On President Roosevelt's right are Gifford Pinchot and Gov. Pardee; on his left, John Muir, Benjamin Ide Wheeler, etc. Out of this visit grew the recession of Yosemite Valley and the Mariposa Grove, and their incorporation in the Yosemite National Park.

"Mariposa Battalion." Of that second expedition we have a vivid and trustworthy report. Dr. Bunnell's account of it, and of the Indian war of 1851, of which it was a part, is a frontier classic, with Tena-ya as its hero. In the old chief's last stand for the mountain fortress of his people, we see the Indian at his best.

The gold-seekers and game-hunters of '49 and '50 were pushing the natives back into the mountains; the Indians were retaliating as usual with robberies,



Western end of Yosemite, with Sentinel Rock and El Capitan, seen from Union Point, 2,350 feet above the Valley floor.



Indian Acorn Cache ("Chuck-ah"), consisting of a large wicker basket set on posts, and thatched with pine branches, points down, to keep out squirrels and mice.

burnings, and occasional murder. To the reservation established by the Indian commissioners on the Fresno, near the site of the present town of Madera, some of the hill tribes had come peaceably. Others were brought in by the militia companies of the new state government. But far in the heart of the Sierra, the half-breed scouts reported, near the head of the Merced River, was a small tribe that refused to leave its deep, rocky valley.

"There," they said, "one Indian is more than ten white men. Hiding places are many, and the Indians will hurl down rocks upon all who pursue them. Other tribes dare not make war on them, for they are lawless, like the grizzly bear, whose name, Yo-Semite, they have adopted, and as strong. We fear to go to this valley. There are many witches there."

Messengers sent to the Yosemitees failed, but at last their chief came alone. Addressing Major Savage, a veteran frontiersman who commanded the Battalion, the grave old Indian said: "My people do not want anything from the Great Father you tell me about. The Great Spirit is our father, and has supplied us with all we need. We want nothing from white men. Our women are able to do our work. Go then; let us remain in the mountains where we were born, and where the ashes of our fathers have been given to the winds. I have said enough!"



Tenaya Peak (10,200 ft.), on the right, with Tenaya Lake in the distance at its foot.

Tenaya was sent to bring in his tribe, but only a part came, mostly the old and the very young. The aged chief, when charged with deception, promised to go on with his people to the soldiers' camp. Major Savage, he said, might go to the valley with one of his youths as a guide,

but he would find no one there; the younger men from Mono and the Tuolumne who had married into the tribe had gone back to the mountains. "My tribe is small," he declared,



In Tenaya Cañon. The upper view looks back to the Half Dome; the lower one shows the gorge blocked by a huge boulder. The steep south wall, swept by avalanches every spring from the side of Clouds Rest, is seen in each picture. This cañon offers great difficulties to the climber.

"not large as the white chief has said. The Piutes and Monos are all gone. Young and strong men can find plenty in the mountains; why should they go to see the white chiefs, to be yarded like horses and cattle? I am willing to go, for it is best for my people."



Lake Tenaya, at the head of Tenaya Creek Cañon. The remarkable domes and polished granite hillsides surrounding this beautiful lake vividly recall its comparatively recent glacial history.



Gates of Tennyson Cañon in Winter—North and Half Domes, Royal Arches, and Washington Column. In beauty of detail, the photograph here reproduced is the finest ever made of these commanding cliffs and peaks. Note the overhang of the arches, the water-etched rock, and the snow-laden trees and chaparral. The vast span of the concentric strata may be inferred from their elevation: the upper arch is 1,500 feet above the Valley. North Dome rises 3,530 feet; Half Dome, 4,850 feet. Clouds Rest, the snowy slope of which is seen beyond, overtops the Valley by almost 6,000 feet.



South Merced Valley, seen from Lookout Point, on the road from Wawona to Yosemite.

Sending Tenaya and his band on to the camp, upon the South Fork of the Merced, Savage and his men proceeded across the upland through deep snow, and on March 21, 1851, descended to the mysterious valley. There they found only an aged squaw. It was as Tenaya had said; the young men and their women had disappeared, and after a brief survey the disappointed whites recrossed the hills to their camp.



A Yosemite Wood-Gatherer.

During this first visit to the valley, Dr. Bunnell proposed naming it Yosemite, after its Indian inhabitants; and the beautiful name was adopted, though not without the usual opposition from men who saw in the Indian merely a savage to be despoiled of his lands. But the Indian name of the valley, as I have said, was Ah-wah-nee. Its ancient tribe had been almost exterminated by disease many years before, and the valley home abandoned, until Tenaya, son of an Ahwahneechee father by a Mono mother, had led back the few survivors of the race, re-enforced by renegade Monos, Piutes from the Tuolumne, and fugitives from the lowland tribes. The mongrel clan of several hundred members proudly adopted a new name given it



Mirror Lake, at mouth of Tenaya Cañon, with reflection of Mt. Watkins, rising more than 4,000 feet above its surface. Perfect reflections such as this are seen only in the early morning interval between the downward currents of the night and the warm winds that draw up the Sierra slope as soon as the sun strikes it.



Yosemite Indian Basket-Maker, weaving a burden basket. The large basket to the left is for cooking.

by others, Yosemite, or Grizzly Bear, for the animal which the Indians most feared and emulated.

Savage never got his captives to the Fresno reservation. When nearly there, alarmed by runners from the hostile Chowchillas on the South Fork, and taking advantage of the relaxed vigilance of their guards, they fled in the night, and were not again to be tempted away from their valley. Inducements successful with other tribes were rejected with

contempt. Gaudy clothing and cheap presents Tenaya declared no recompense for loss of freedom in their mountain home. Even the offered beef was refused; the Indians preferred horse-flesh. Hence, after the Chowchillas had been subdued, and the other tribes had made treaties, Savage sent a second expedition, under Captain Boling, to bring in the stubborn Yosemite. Bunnell again was of the party, which expected to have little difficulty in persuading Tenaya to surrender. But on reaching the valley in May, Boling found only deserted wigwams and smoking ash-heaps telling of hasty flight. Three of the chief's sons were captured at the foot of the great rock then named, in memory of the capture, "Three Brothers." One of these youths was killed in trying to escape, and shortly afterwards Tenaya himself was caught by Boling's Indian scouts on a



"Umbrella Tree," a snow-flattened pine at head of Nevada Fall.

high bench east of the "Big Falls," whence he had been watching his enemies below. When he saw the body of his son, his grief found vent only in a look of hatred that Boling well understood. No word could be coaxed from him in reply to the captain's regrets for the youth's death. A day or two later, he made an unsuccessful attempt to escape across the swollen Merced. Then at last his grief and rage poured out in characteristic speech.

"Kill me, Captain," he cried, "as you killed my son; as you would kill my people, if they were to come to you. You have made my life dark. But wait a little. When I am dead, my spirit will make trouble for you and your people. I will follow in your footsteps, and be among the rocks and waterfalls, and in the rivers and winds. You will not see me, but you shall fear the spirit of the old chief, and grow cold."

Tenaya's appeal to the unknown was as futile as eloquence generally is. The white conquest paid no heed to his threats. Steadily rounding up the savages, Boling's party captured the last of their band at a rancheria or village a few miles above the valley, on a beautiful lake walled by polished granite cliffs and domes, which they at once named Lake Tenaya. "But it already has a name," Tenaya protested,— "'Py-we-ack,' Lake of the Shining Rocks." The naming of a lake in his honor seemed to him a poor equivalent for the loss of his territory. Another chance was given him.



Wild Flowers beneath the Royal Arches.



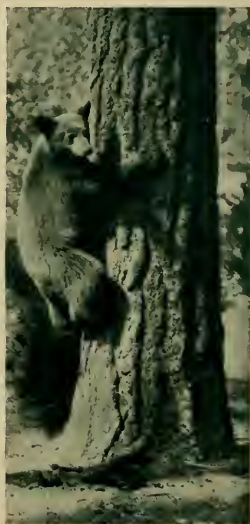
The "Forest Queen," in the Mariposa Grove,—an exceptionally straight trunk, without the usual buttresses at the base.

Taken at last to the Fresno, he soon begged for leave to quit the heat and dust of the reservation; and on his pledge of their good behavior, he led back his people once more to the cool spaces of the Yosemite. The aged sachem himself kept faith, but he could not control his young men. The killing of prospectors in the valley the next summer quickly brought a third visit from the soldiers, and the final dispersion of the Yosemite. It hardly detracts from the pathos of Tenaya's losing fight for his wild home that he and his last handful of followers were killed by Monos whose hospitality they had repaid by stealing their horses. The Indian's code did not recognize other people's rights in livestock.

Present-day visitors to Yosemite are often disappointed that their first impression of the height of the valley walls falls short of published accounts. Yosemite magnitudes are not quickly realized. Even Dr. Bunnell was ridiculed by Captain Boling and others when he estimated the

superb granite cliff opposite their camp as at least fifteen hundred feet high. Some guessed five hundred, others eight hundred. Not even Bunnell himself dreamed that El Capitan actually towered more than three-fifths of a mile above the silent Merced.

Its Indian inhabitants gone, Yosemite soon came into public notice. As early as 1855, the first tourist parties visited the valley. Trails were quickly opened, rude inns established, and, in 1864, John Conness, a senator from California, introduced and Congress passed an act granting to the state "the 'cleft' or 'gorge' in the granite peak of the Sierra Nevada Mountains . . .



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"Watch Me!"

known as the Yosemite Valley, with its branches or spurs, in estimated length fifteen miles, and in average width one mile back from the main edge of the precipice, on each side of the valley, with the stipulation, nevertheless, . . . that the premises shall be held for public use, resort, and recreation." To this grant was added the "'Mariposa Big Tree Grove,' not to exceed the area of four sections." In 1890, Congress created the Yosemite National Park, subject to the grant of 1864. Its lines have since been modified considerably by acts of 1905 and 1906, excluding the head basins of the north and middle forks of the San Joaquin, and embracing more completely the watersheds of the Tuolumne and Merced Rivers. Its area, as already noted, is now 1,124 square miles.

The dual administration established by the creation of the National Park surrounding the State Park was soon found impracticable and disastrous. The state commissioners did the best they could with the ten or fifteen thousand dollars annually voted by the legislature, but these inadequate appropriations were largely consumed in the salaries of park guardians and the traveling expenses of the commissioners; little was left for needed improvements. Much of Yosemite Valley was fenced in, and let to private contractors. Conflicts occurred between the state and federal authorities. A forest fire, for example, was sometimes left to burn while the officers debated as to which jurisdiction was responsible!



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On the Overhanging Rock at Glacier Point, with eight feet of snow.



Blue Jay, in Merced Cañon below Vernal Fall.



John Muir in Hetch Hetchy. The tree shown here is a fine example of Yellow Pine.

John Muir was one of the first and most active in pointing out the importance of ending this *imperium in imperio*. His opportunity came in 1903, when he was invited by President Roosevelt to accompany him on his visit to Yosemite. Governor Pardee, President Benjamin Ide Wheeler of the State University, and other well-known men were in the party, which received Mr. Muir's arguments for the recession of the valley and Big Tree grove with unanimous approval.

A vigorous state-wide campaign was started by the Sierra Club, the strong California society of mountain-lovers of which Muir was president. The plan won generous support from the newspapers of the state, as well as from the

Native Sons and other large organizations; and was eventually successful, though its advocates had to overcome bitter opposition, both at Sacramento and at Washington, from certain politicians and favored concessionnaires whose private interests conflicted with the public advantage.

The recession has been justified by its results. Better order has been established, and in every way the rights and convenience of the public have been promoted. The federal management, while sometimes open to criticism, has devoted annual appropriations exceeding \$50,000, besides an increased income from concessions, mainly to improvements that would still be lacking under the clumsy dual system. Several hundred thousand dollars have been spent in building good roads and permanent bridges, and in leading trails into all parts of the Park. No one who views the matter impartially can now be found to advocate a return to the old régime.



Ready for the Tralls.



Tennaya Cañon, from Glacier Point (3,250 feet), with the late Galen Clark at the age of 94 on "Photographers' Rock." The perpendicular cleavage of the Half Dome by weathering is well shown in this view. Mirror Lake lies below in the cañon, and beyond rise Mt. Watkins on the left, Clouds Rest on the right, and Tennaya Peak in the distance at the head of the cañon.



Half-Dome in the Alpen-Glow.

Now, while a farewell gleam of evening light
Is fondly lingering on thy shattered front,
Do thou, in turn, be paramount; and rule
Over the pomp and beauty of a scene
Whose mountains, torrents, lake and wood unite
To pay thee homage.

—Wordsworth.



Merced River and the Forest in Yosemite, with Half Dome in distance.

II.

THE CAÑON OF YOSEMITE.

"Of the grandest sights I have enjoyed,—Rome from the dome of St. Peter's, the Alps from Lake Como, Mont Blanc and its glaciers from Chamouni, Niagara, and Yosemite,—I judge the last named the most unique and stupendous."—*Horace Greeley*.

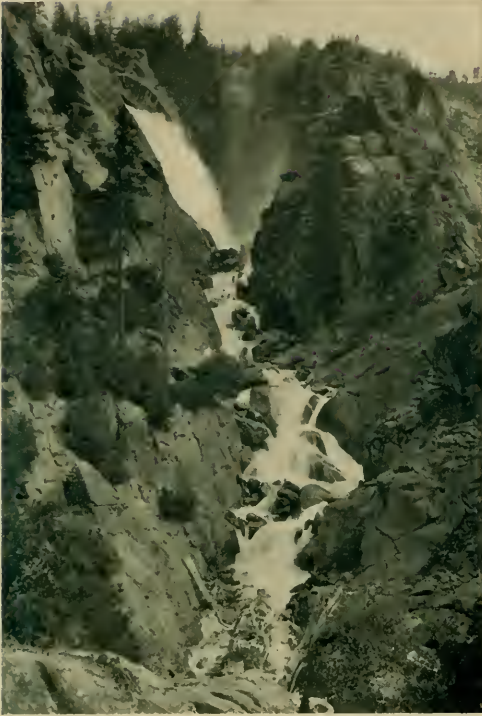
"The only spot I have ever found that came up to the brag."—*Ralph Waldo Emerson*.

EARLY visitors to Yosemite paid well for its pleasures. To reach the valley by any of the old routes meant a hot and dusty ride of two or three days, in a primitive vehicle, over the roughest of mountain roads. In common with thousands of others, I painfully recall my first trip. We quit the train from San Francisco at Raymond, to endure a day of misery in a crowded "stage," which jolted us up from the low country into the noble valley of the South Fork at Wawona. That ride made the friendly little inn there, when we finally reached it, seem more luxurious than any metropolitan hotel. The next day was spent among the Mariposa Big Trees. The third carried us across the broad Wawona ridge to Inspiration Point and the hard-won vision of Yosemite itself. We were bruised and happy.

Hundreds of tourists still come and go by the



Lost Arrow Trail, east side of Yosemite Creek, leading to Camp Lost Arrow.



Chilnualna Falls, near Wawona; one of the most beautiful series of cataracts and cascades in the Park.

Wawona route, leaving or returning to the railway at Madera or Raymond. Automobiles, good roads, and improved hotel service have robbed the trip of its terrors. The traveler is able to enjoy fully the increasing interest of a wonderful ride, as his motor climbs swiftly back among the great, forested hills of Wawona. It is a country which, even without Yosemite or the Mariposa Grove, might well draw him to its own splendid outlooks, deep valleys, and fine waterfalls and lakes,—a sportsman's paradise that should form part of any extended Yosemite outing.

The Wawona route, like the Big Oak Flat road north of the Merced, is recommended by the fact that it gives the incoming visitor his introduction to Yosemite Valley from the heights. Few things in this world can exceed the surprise and pleasure of that view. Nearing the rim of the plateau, the road suddenly leaves the forest for a turn far out on a rocky promontory. Nearly two thousand feet below, the river lies, a white thread, at the bottom of its gorge. The foreground is wild and unformed,—an abyss fringed by projecting crags and pinnacles, and barren save for a few rugged and adventurous pines clutching the ledges. But eastward opens the famous valley, always more impressive than imagination has conceived it. Its nearest cliffs tower as far above as the river lies below, while, miles beyond, the great picture closes with domes and peaks lightly silhouetted against the softest blues and whites of the Sierran sky.



"New England Bridge," at Wawona, built by Galen Clark in 1870.



Bridal Veil Meadow, on the route of the ancient Pohono Glacier. Such sunny glacial flats, large and small, telling of old lakes long since transformed by stream-wash, are come upon everywhere below timber line, on forest trails or among the upland granite domes. Homes of flowers and deer, musical with the song of birds, they are one of the surprises of the Park.

It is a picture one can not afford to miss, and if he comes to Yosemite by rail, as most visitors now do, he will lose much of its beauty if he fails to see the valley from Wawona road. I do not wonder that every artist wants to paint his interpretation of Yosemite's message from the sublime outlooks on or near this road, as it rises out of the cañon; or that the scene inspires such admirable work as we have in Mr. Jørgensen's Bohemian Club painting. But all nature-lovers will indorse Mr. Chase's protest against the cheap, bromidic names given these view-points. It does not add to the inspiration of the scene to be told, "This is Inspiration Point!" There is both good humor and good sense in what Chase says:

Inspiration, in any case, is a timid bird, which appears without advertisement, delights not in sign-boards, and



On Wawona Road, near Inspiration Point.

the louder it is whistled for is the more apt to refuse to come. I have heard the spot spoken of by warm and jocular young gentlemen as Perspiration Point; and although that species of witticism is, generally speaking, distasteful to me, I find that I suffer no pang when it is practiced at the expense of this piece of pedantry.—*Yosemite Trails*, p. 28.



The Merced River, three miles above El Portal. The sharp V-shape of the gorge indicates that it was probably cut by stream erosion, rather than by the glacier which carved the U-shaped cañon of Yosemite above. Along this wild trough, filled with boulders from the cliffs, an excellent automobile road has been built at great cost.

The majority of Yosemite visitors to-day prefer the quicker service of the railway, even to automobiles on the roads into the Park which have recently been opened to those vehicles. Leaving the Southern Pacific or Santa Fé system at the pleasant town of Merced, their through cars from San Francisco or Los Angeles carry them over the Yosemite Valley Railroad to El Portal, its terminus, just outside the Park boundary. This road is a noteworthy piece of railway building. A few miles above Merced, it enters the Merced River gorge, which it follows for the rest of its seventy-eight miles, as the cañon sinks deeper into the range. For most of this length it was blasted out of the granite or cleated upon the wall of the gorge. Below it the Merced winds in a narrow, tortuous channel, which is dammed here and there to supply power for quartz and lumber mills. Gold mining is in progress at many points.

At El Portal, the railway maintains an excellent hotel. From here automobile stages run not only to Yosemite, but also to the Merced and Tuolumne Big Tree Groves. These small areas contain many fine trees, and the journey to them is one of great interest. The road, as it climbs the hills, unfolds magnificent views of Yosemite and the lower Merced valley. Even if there were no Giant Sequoias in prospect, the ride would be well worth while, for the forests of fir, pine and cedar through which it passes are among the most interesting in the state.

A ride of twelve miles over a good automobile road of easy grades brings the visitor to Yosemite Village, at the center of Yosemite Valley. This highway is one of the most picturesque mountain roads in America. From El Portal to the very gates of the valley, it had to be cut out of the granite hillsides. All about it is a scene of colossal disorder, the work of avalanche and earthquake, filling the cañon with mighty boulders from the cliffs



Cascade Falls, four miles west of El Capitan.

above, over which the river foams in continuous cascades. One great waterfall is passed before we reach Yosemite, though among the multitude of cataracts hereabout it is so inconspicuous that the automobile driver may rush by it without calling his passengers' attention to its beauty. This is Cascade Falls, seen on the left, where Cascade Creek pours from the north wall of the cañon, five hundred feet, in a deep recess close to the road. So fine a sight should not be overlooked. It prepares one for the



Bridal Veil Fall, seen in early Winter from the south-side road.

greater magnificence of Bridal Veil Fall ahead.

Soon, quitting the narrow, cluttered wildness of the lower river, the newcomer is face to face with the ordered peace and glory of Yosemite itself. Gratefully, silently, he breathes the very magic of the Enchanted Valley. For here, fully spread before him, is that combination of sylvan charm with stupendous natural phenomena which makes Yosemite unique among Earth's great pictures. He sees the cañon's level floor, telling of an ancient glacial lake that has given place to wide, grassy meadows; fields of glad mountain flowers; forests of many greens and lavenders; the fascination of the winding Merced, River of Mercy; and, gleaming high above this world of gentle loveliness, the amazing gray face of El Capitan, while Pohono drops from a "hanging valley" superbly sculptured, and so beautiful

that he may well deem it the noblest setting Nature has given to any of her famous waterfalls.

Here, too, at the very gates of the valley, we find an invaluable key to the problem of its origin. As we followed up the Merced, we have thus far seen it everywhere a turbulent cañon stream. But at the base of Cathedral Rocks its character changes. For seven miles above that point, it is the most peaceful of meadow-bordered rivers, with only a few feet of fall as it meanders indolently down the level valley floor from Happy Isles. A little easy investigation, for want of which, however, some eminent scientists have gone far astray, explains the change.

At the place just mentioned, where El Capitan bridge formerly



Winter Sports in Yosemite. Skiing and snow-shoeing draw many parties to the Valley each winter.



El Capitan and Three Brothers, seen from the moraine at the foot of Cathedral Rocks. Tourists of the class that finds its chief out-door interest in discovering zoological resemblances in natural objects have dubbed El Capitan "the Crouching Lion of Yosemite." This is a misnomer, as the splendid huge rock is obviously an elephant!

stood, and where its piers may yet be seen, a broad ridge of glacial debris, now covered with young forest, and notched by the river channel, stretches from the talus slope below Cathedral Rocks a quarter of a mile across to the rock slide, or earthquake talus, west of El Capitan. It is largely buried in silt and river gravel, but about twenty feet of its height is visible on the upper side, and twice as much below. So solid and level an embankment of soil and boulders, some of which have been freighted down from the sea-beach strata still remaining back on the highest peaks, is unmistakably a glacier's record. Had Prof. J. D. Whitney seen it when, as state geologist, he conducted his famous Yosemite survey, fifty years ago, he would



A Glimpse of North Dome, from one of the beautiful forest roads in Yosemite Valley.

El Capitan.

Eagle Peak.

Yosemite Falls, Yosemite Point.

Indian Cañon.

North Dome.

Half Dome.



Yosemite Village.

North Wall of the Valley, seen from the talus back of Yosemite Village. The trail to the top of Yosemite Falls and Yosemite Point climbs out of the Valley over the wooded earthquake talus seen in this view below Eagle Peak, follows the second bench eastward to the foot of the upper fall, and then, by many zigzags, ascends the small glacial cañon west of that cataract.

Mt. Watkins.

Clouds Rest.

Little Yosemite.

Mt. Clark.

Merced River.

Royal Arches.

Tenaya Cañon.



Tenaya Cañon.

Half Dome, Mt. Broderick, Liberty Cap, Vernal and Nevada Falls.

Mt. Starr King.

Panoramic View East from Washburn Point, above Glacier Point.



Cathedral Rocks and Splres, from the Merced River near Rocky Point.



The "Back Road," on the south side of Yosemite. The trees shown are chiefly California Black Oaks (*Quercus kelloggii*), a deciduous species that does much to beautify Yosemite and Hetch Hetchy. Its acorns supply bread to the Indians, and are prized by squirrels and woodpeckers.

not have made the blunder of his life by denying that the valley was due to glacial action, or said: "There are below the valley no remains of the moraines which such an operation could not fail to have formed." For in fact this ridge is simply a terminal moraine, deposited by the great valley glacier at the point where the last of its repeated advances stopped, and from which its final slow retreat began.

The line of the moraine, geologists tell us, practically coincides with, and covers, a granite bar, or sill, which formed the dam of the ancient Yosemite Lake.

This body of water had the same history as hundreds of other cañon lakes still to be found in the High Sierra, occupying the depressed treads of the huge glacial stairways. Deep basins were quarried by the glaciers wherever inflowing branch glaciers greatly augmented their mass and weight, with a corresponding increase in digging power. Glaciers alone produce these rock-basins. Lakes such as Merced and Tenaya, above Yosemite Valley, and filled lake-beds such as Yosemite and Hetch Hetchy Valleys, are found only in the tracks of the vanished ice-streams. River erosion never cuts such hollowed steps in water-channels. It requires the long scouring of incalculable moving ice-masses, armed with vast rocks plucked from their beds, to prepare the cañons for the lakes and level valleys of the later time.

Thus the sudden change in the Merced River, from a quiet meadow stream to a brawling mountain torrent, recalls vividly to the modern student that distant day when the receding glacier left behind it a beautiful lake, seven miles in length and probably four or five hundred feet deep,



Yosemite Falls, seen from trail through the beautiful oak and pine forest that skirts the north wall of the Valley. The upper fall, beginning 2,565 feet above the Valley floor, drops 1,430 feet; the lower fall, 320 feet, with several smaller falls between. Yosemite Point, 2,975 feet, is on the right, and the tall granite spire in front of it is the "Lost Arrow" of Indian legend.



Cliff at Head of Yosemite Falls, showing the vertical cleavage joints which have guided the glacial sculpturing and made possible the sheer walls of Yosemite, Hetch Hetchy and similar cañons.

walled by perpendicular cliffs rising more than three thousand feet, and dammed by a rocky moraine overlying a granite dike. Where the lake ended, the Merced cut a pass for itself through the moraine. This is also used by the road to-day. The lake itself, probably within the last two or three hundred years, if we may judge by the trees growing where once was only water, has filled up with rich alluvial soil, brought down mainly by spring freshets from near-by heights, rather than by the larger river, and giving us the fertile valley floor, with an inestimable part of the beauty of Yosemite.

That Yosemite Valley is due mainly to glacial action, which deepened and widened a river gorge existing before the glacial epoch or epochs, is now generally accepted by the geologists; they differ only as to the length of the main Yosemite glacier, some believing that it extended little below El Capitan, while others find

evidence that convinces them it reached the foothills. Government geologists are now making a minute examination of the region, and the publication of their work will throw light on many such minor problems. But the main question is no longer disputed.

Such agreement, however, is of comparatively recent date. There have been many theories as to the making of the great cañon. The most interesting of these, because of the eminence of its author, and the violence with which he mistakenly denounced the glacial hypothesis, was the famous fault-block contention of Prof. Whitney. Said he:

A more absurd theory was never advanced than that by which it was sought to ascribe to glaciers the sawing out of these vertical walls and the rounding of the domes. Nothing more unlike the real work of ice, as exhibited in the Alps, could be found. Besides, there is no reason to suppose, or at least no proof, that glaciers have ever occupied the valley, or any portion of it, so that this theory, based on entire ignorance of the whole subject, may be dropped without wasting any more time on it. . . . We conceive that, during the upheaval of the Sierra, or, possibly, at some time after that had taken place, there was at the Yosemite a subsidence of a limited



Leopard Lily (*L. pardalinum*), a gorgeous orange - and - purple member of the Lily family, which frequents the lower valleys of the Park.



Evening Primroses and the Half Dome. These beautiful luminous yellow flowers are a familiar decoration of Yosemite, Hetch Hetchy and other valleys in the Park during July, when their buds "pop" open noisily at sunset for a single night of fragrant revelry.

area, marked by lines of "fault" or fissures crossing each other somewhat nearly at right angles. In other and more simple language, the bottom of the valley sank down to an unknown depth, owing to its support being withdrawn from underneath. — *The Yosemite Guide Book*, 73, 74.

Had Whitney's examination of the valley been thorough enough to take note of the old moraine below El Capitan, it is probable he would not have written those words. And yet he had other evidence that should have prevented his error. El Capitan Moraine and the old Yosemite Lake which it helps us



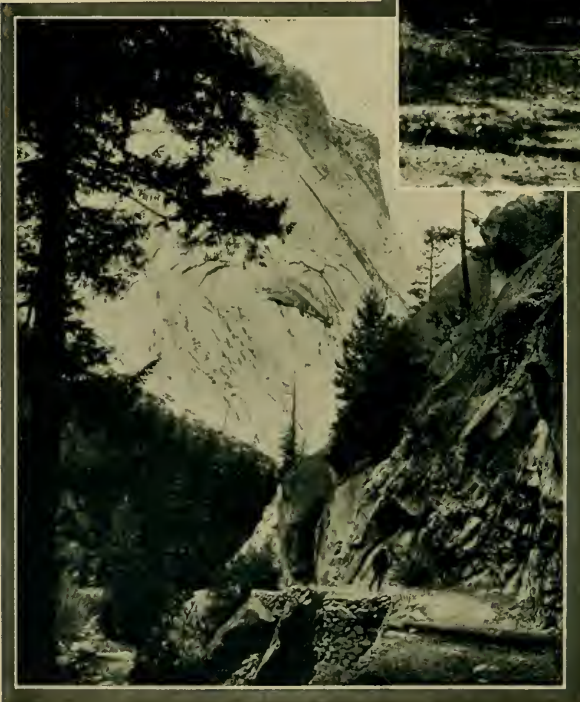
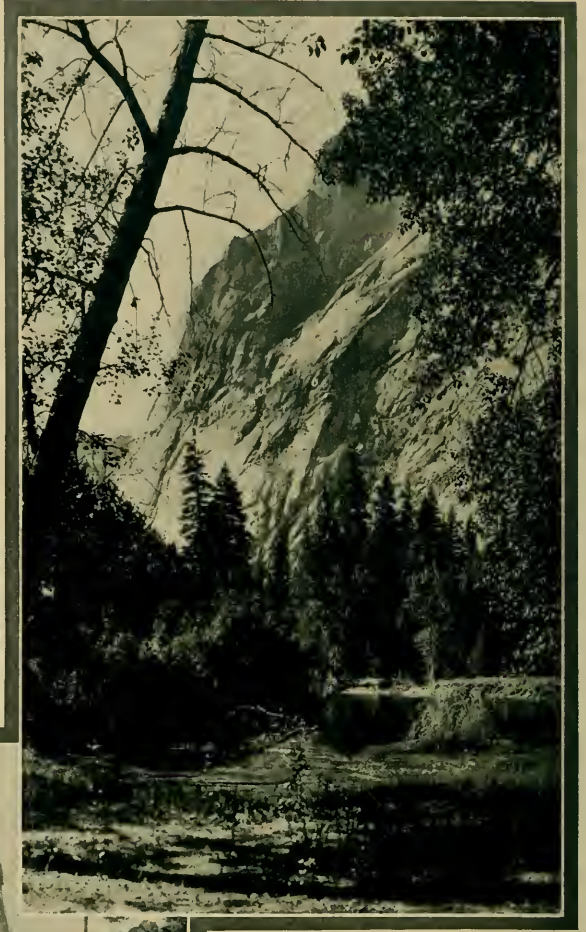
Ice Cone at the Foot of Upper Yosemite Fall. This volcano-like hill rises each winter to a height of four or five hundred feet, formed by the freezing spray and by blocks of ice fallen from the face of the cliff. The mouth of the cone is about 200 feet in diameter, says Muir, who has looked down into it from the ledge seen on the right in the upper picture. The two small specks on the side of the cone in the lower view are the late Galen Clark and a companion, who climbed it to get a look into the "crater."

to reconstruct are far from being the only reminders of the valley's glacial history. Most striking of all, the hanging valleys on its walls are no less clearly of glacial origin.



Overhanging Rock at Glacier Point, the most famous and important viewpoint on the rim of Yosemite. From it the spectator looks down 3,250 feet sheer to the Merced, winding among the forests and meadows of the Valley floor, and across to the beautiful Yosemite Fall, dropping half a mile out of its own hanging valley.

As we pass Bridal Veil Fall, we note that it drops, not from a flat plateau above, nor from a narrow cleft in the wall, but out of a high side-valley, which in turn is framed by lofty cliffs. The U-shape of this broad valley is so clear that we at once perceive that it, too, must have been scoured out by a glacier, rather than by Pohono Creek, which could have cut only a V-shaped gorge. Its sculptor, in fact, was a minor glacier, mighty enough to dig a splendid wild valley, more than fifteen hundred feet deep, but not powerful enough to sink it to the bed of the main valley. Hence, as the larger



Glacier Point, jutting into Yosemite Valley at its junction with the Merced-Illilouette Cañon. Seen either from the Valley floor or from the trail to Vernal Fall, this massive cliff is the stateliest headland of the south wall. Its precipitous faces are due to glacial quarrying along vertical joint-planes.

glacier shrank in bulk, and ceased to fill the great cañon of Yosemite, the Pohono glacier was left "hanging" on the side, to drop its ice and rock in avalanches upon the trunk glacier below. Finally, both glaciers vanished,



Vernal Fall.

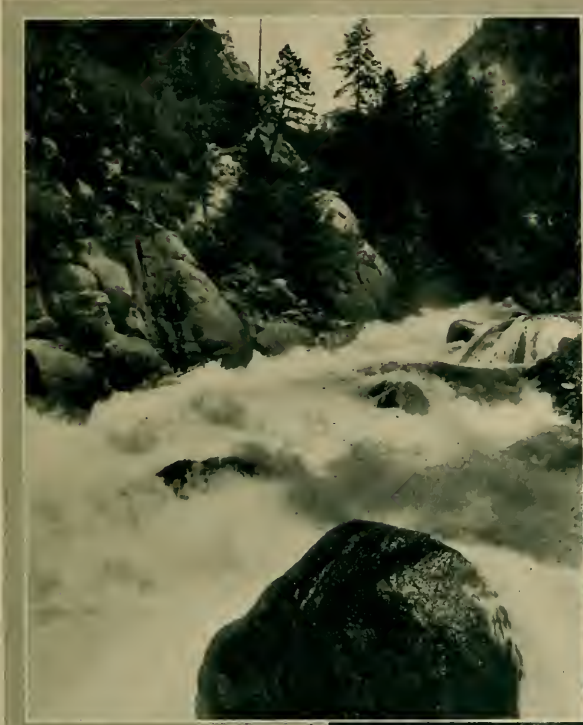
Thy springs are in the cloud, thy stream
Begins to move and murmur first
Where ice-peaks feel the noonday beam,
Or rain-storms on the glacier burst.
—Bryant.



Illilouette Fall, viewed from its cañon below. This fine waterfall has a drop of 370 feet. It is a hard climb up Illilouette Cañon from the Merced River to the foot of the fall, which may be seen more easily from above, on the Long Trail to Glacier Point.

with increasing mean temperature and decreasing snowfall. Of their cañons one was occupied by the typical glacier-made lake of Yosemite, nearly four thousand feet above sea; while the other, for want of icebergs to drop into the lake, just as plainly declared its origin by flinging out a glacial banner, the most graceful and musical, though far from the largest, of the Yosemite waterfalls.

Other famous cata-racts hung high on the valley walls repeat the story of Bridal Veil. Yosemite Falls, at the center of the north wall, and Illilouette, on the south wall at the head of the valley, are the most important in volume and length of season, telling by their well-defined hanging valleys and fan-like amphitheatres, set deep in the highlands, that they,



The Merced at Happy Isles
—two beautifully wooded islets at the upper end of the Valley, where the river rushes out of its narrow cañon below Illilouette and Vernal Falls.



too, are glacier-born. No more enjoyable occupation can be found for part of a Yosemite vacation than to trace their old glaciers to their sources in the Hoffman and Merced spurs of the main Sierra.

If one follows up Yosemite Creek, above its falls, and beyond the old Tioga Road, he discovers a fine cluster of glacial cirques, stretching around from the north side of Mt. Hoffman, along the southern slope of the Merced-Tuolumne divide, and forming a mountain-walled basin, almost



Le Conte Memorial, at the foot of Glacier Point; erected by the Sierra Club in honor of the late Prof. Joseph Le Conte, the famous geologist and author, of the University of California, and maintained as the Club's Yosemite headquarters. Here a library of out-door literature is accessible to the public.

circular, and five or six miles in diameter. In outline it is like the spreading crown of one of the cañon live-oaks that beautify the upland roads and trails. This characteristic abandoned home of a minor glacier no longer holds its permanent névé. It is to-day merely a temporary reservoir. There the annual

snows are held until it pleases their parent, the Sun, to transform them again into summer floods, and send them, singing, down the valley to join the Yosemite chorus. Yosemite Creek now flows to its fall amidst a wild panorama of gray, barren domes and fir-covered moraines. But here for centuries a shallow glacier, fifteen miles in length and several miles wide, crept slowly from the Mt. Hoffman Range to meet the great ice-stream of the Merced; and when the larger glacier sank low in its vast cañon, the north-side feeder dug back its section of the wall until it had quarried a deep branch cañon, in which Yosemite Upper Fall now thunders its own



The "Fallen Monarch," with troop of cavalry. This great Sequoia, standing, was one of the largest in the Mariposa Grove.



Vernal Fall, from Clark's Point, on the horse trail. This famous curtain is eighty feet wide, and has a drop of 317 feet. Although the most conventional of the great falls in Yosemite, Vernal offers a magnificent picture, both in its setting and in its wealth of color. The golden greens and blues of the steadily falling stream, its shooting "comets," clouds of spray, and circular rainbows, make it an ideal study, well worth many visits.



Vernal Fall in Winter, when the Merced's fountains in the High Sierra are frozen, and curious ice-forms are built by the spray at the foot of the shrunken fall.

verging moraines, the whole walled by snowy mountains that rise to elevations of eleven thousand feet. Some idea of it may be had from the illustration on page 22. But its wonder and beauty are beyond the power of photography. The best general view is to be had from Mt. Clark or the east slope of Mt. Starr King, whence one carries away a lasting picture of what a glacier can do as a landscape architect.

Differing from these three important cataracts in their manner of birth, but none the less proclaiming a glacial origin, Vernal and Nevada Falls, at the head of the valley, are the largest in volume of all the Yosemite group. Instead of falling from their own hanging valleys, backed by independent basins, they are part of the Merced itself, and drop from giant steps in the river's glacial stairway. These steps, like the outstanding sheer cliffs of

chapter of the glacial story, king of all the waterfalls in height and stateliness.

How easily the Yosemite cliffs were undercut and torn away by the blows of avalanches from the glacier above may be guessed from the picture on page 72, showing the wall so deeply fissured by vertical and intersecting cleavage planes that it is merely a standing pile of huge rectangular granite blocks, ready to be tumbled over by any power that can.

The Illilouette watershed is larger, and even more interesting, as rimmed by higher mountains. From the "Long Trail" approaching Glacier Point, we get a good view of its deep lower valley, encircling Mt. Starr King, and inviting us back to its fountain basins sunk in the west flank of the Merced Range. There Mt. Clark, and Gray, Red and Merced Peaks, accent as noble a ring of cirques as we shall find below the very crest of the Sierra. This watershed, once occupied by a broad river of ice, is now a land of sunny meadows, shining domes, and densely forested con-



At the Head of Nevada Fall. Here a projecting ledge, guarded by an iron rail, enables visitors to study the wild flood at close range.

Yosemite, owe their remarkable height and perpendicular faces to the alternation of practically solid granite ridges, lying across the path of the ancient Merced glacier, with areas of looser rock, vertically jointed, and therefore readily disintegrated by the ice.

Glacial cañon steps as high as these are exceedingly rare. Hence cañon waterfalls of the height of Vernal and Nevada are elsewhere almost unknown, while cliff cataracts of even greater fall, dropping from hanging valleys on the sides of trunk-glacier cañons, are a familiar feature of every important alpine district. But the two renowned falls of the Merced stand quite alone among cañon cataracts in their union of large volume with great altitude, Vernal falling 317 feet, and Nevada 594 feet. Not only are they thus exceptional in magnitude, but the glacier used the local rock formations to make them different. Each has its own special character. Vernal meets all the requirements of an ideal cataract,—a solid sheet of clear water bending easily from the brink of a

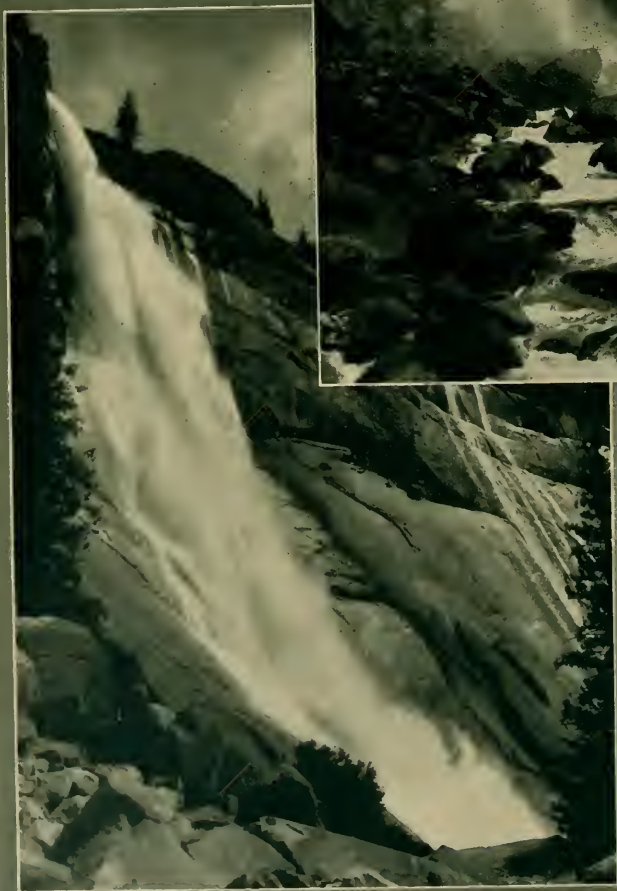


The "Cataract of Diamonds," between Vernal and Nevada Falls.



Little Yosemite, with its bare granite slopes, seen from summit of Liberty Cap, with Half Dome on the left. Here, too, a Jeffrey Pine, more symmetrical than that on Sentinel Dome, has established itself. Mt. Clark is in distance (left).

broad, level granite platform, and offering all the colors of its own delightful rainbows, as the flood changes swiftly from golden green at its brow to broken grays and flashing snows in the sunny cañon below. Nevada presents a striking contrast to such conventional, if surpassing, beauty. Already churned to foam in a



Nevada Fall (594 ft.), seen from the cañon below and from Zig-Zag Trail, halfway to the top. In display of power, this great fall ranks first among the Yosemite cataracts.

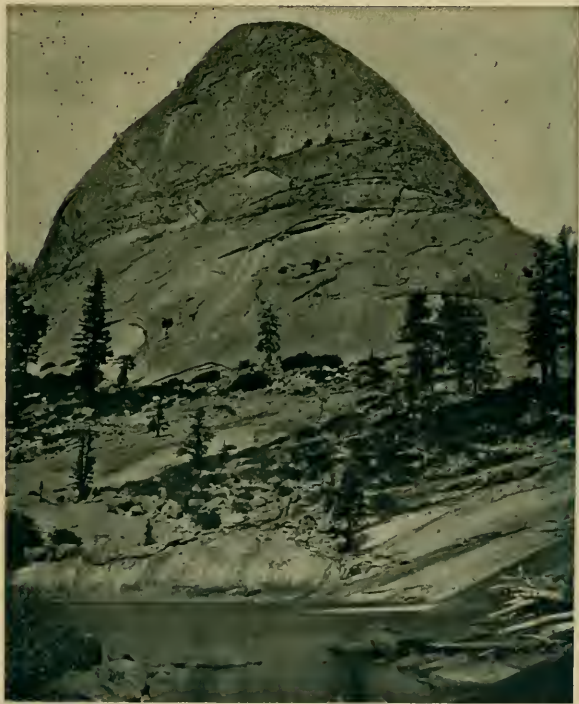
steep, crooked trough, it shoots far out from its narrow cleft, a passionate cloud, seemingly made up of millions of distinct, pearl-like drops; and midway in its descent it strikes the sloping cliff, spreading into a wide "apron" of



Little Yosemite, with Clouds Rest in the distance.

still more dazzling whiteness. So splendid are the children of the glaciers.

The record of these waterfalls is corroborated by the rock-basins which the glacier scoured out on their plateaus, just as it hollowed the basin of Yosemite Lake itself. Emerald Pool, the little tarn immediately above Vernal Fall, is hardly a stone's throw across, but unmistakable. River erosion could never have fashioned so perfect a bowl. A mile higher up, beyond Nevada Fall, the basin was three miles long, holding a lake that has now given place to the charming vale of Little Yosemite. Here bare cliffs and domes frame another level valley of meadow, forest and lazy river, all on about one-half the scale of the greater Yosemite below. Other yosemites lie beyond, until we reach the splendid glacial lakes, Merced and



Sugar-Loaf Dome, at the head of Little Yosemite.

Washburn, far up the cañon. These, too, in time will fill with detritus from the hills, and become delightful valleys. Nature abhors barren waters.

Glacial history is also written plain on the two "domes" that rise just north of Nevada Fall, called the Cap of Liberty and Mt. Broderick. These are simply masses of unfissured granite, too large and solid for the glacier to plane away, though it gouged out the vast beds of jointed rock in which



Climbing the Half Dome. This feat was first performed in 1875 by George Anderson who drilled holes and set eye-bolts in the northeast slope, the only practicable route. The ascent is now made by occasional adventurers, aided by Anderson's spikes and a rope. The lower view here shows a climber making his way up across the projecting layers of granite.

they lay; and as it swept over them, it shaved down their east slopes so that one may easily scale them, and find glacier boulders on their tops that have traveled far.

As Merced Cañon forms the southeast branch of Yosemite Valley, so the still deeper cañon of Tenaya Creek is its northeastern arm. Here the glacial story is less plain, and on first sight, from the heights on either side, it might be overlooked. For above the cañon's lower two miles,—that is, beyond the foot of Mt. Watkins,—it crowds to a narrow box-cañon between that great cliff and the steep incline of Clouds Rest. This might seem to be a V-shaped, stream-cut gorge, rather than to have the broader bottom commonly left by a glacier. But a little exploration discovers glacial footprints in the terminal moraines and the lakes and filled lake-beds, with fine connecting waterfalls, that mark a glacier's descent from the Cathedral Peak Range, south of the Tuolumne. We have hardly entered the cañon, indeed, before we are reminded of El Capitan moraine and the enclosed Yosemite Lake. A similar boulder



Overhang at Summit of the Half Dome, nearly a mile above the Valley floor and Tenaya Cañon. El Capitan is seen in the distance.



Phlox (*P. douglasii*), on the Glacier Point Trail.

ridge, thrown across the cañon here, is traversed by the road as it carries visitors on their early morning trips to see the sunrise reflections in Mirror Lake. This lakelet evidently occupies the lowermost of the glacial steps. It is a mere reminder of its former size, the delta of Tenaya Creek having stolen a mile from its upper end. Farther up the cañon, below and above Mt. Watkins, stream sediment has already turned similar lakes into meadows. But eight miles east of Yosemite, at the head of the cañon, Tenaya Lake not only presents one of the most fascinating views in the whole Park, but also recalls, in its polished granite pavements, walls and domes, a very different scene,—a picture of the old Tuolumne glacier, split against the east front



Half Dome at Sunrise, seen from Glacier Point.

of Mt. Hoffman, and sending part of its immense ice-stream over the low divide into Tenaya basin, to form the main ice supply of Tenaya glacier, and the rest down Tuolumne Cañon to Hetch Hetchy.

Thus Tenaya Cañon forms no exception. Its narrowness between Clouds Rest and Mt. Watkins, well shown in Prof. Le Conte's pictures on

page 49, is seen to be due to the solidity of the huge inclined strata of the former, and the fact that the latter is a single block of massive granite, rising as high, as sheer and as unbroken as El Capitan, which it greatly resembles. The striking contrast which Tenaya Cañon thus presents to Yosemite Valley is lucidly set forth by Mr. Matthes, the well-known expert of the Geological Survey:



On the "Short Trail" to Glacier Point. This trail commands splendid views of Sentinel Rock, Yosemite Falls and the Valley floor.

The Yosemite Valley evidently was carved from prevaillingly fissured materials in which the ice was able to quarry to great depth and width. Tenaya Cañon, on the other hand, was laid along a rather narrow zone of fissuring, flanked by close-set, solid masses; and the glacier that flowed through it, while permitted to carve deeply—more deeply even than the mightier Yosemite glacier,—was impeded in its lateral excavating, and has been able to produce only a narrow, gorge-like trough.—*Sketch of Yosemite National Park.*



Lake Merced, one of the finest mountain-walled glacial lakes of the Sierra, in the upper Merced Cañon, four miles above Little Yosemite.



A Characteristic Dome Landscape; view north from Glacier Point, looking across Yosemite Valley to North Dome, Basket Dome, and Mt. Hoffman. In the foreground, note the deep fissure separating Washington Column from the Royal Arches.

Yosemite offers many other convincing particulars of the life of its great valley glacier. The beauty of its cliffs is no more obvious than is their testimony regarding their origin, outline and sculpturing. Their perpendicular fronts and projecting angles, narrowing the valley here, or overtowering its deeper recesses there, tell unmistakably of the glacier's work as a giant sapper and miner. But that work was made possible by the extreme mingling of zones of jointed and unjointed granites. It was carried on first by the ice, and later

by all the agencies of weathering,—water, frost and snow. Where the valley contracts, we find unfissured masses that resisted the stresses of the cooling earth, and in the glacial age were able equally to withstand the action of ice. Here El Capitan and Cathedral Rocks, rising opposite each other at the valley's narrowest part, were undivided blocks too vast for the glacier to remove. So Yosemite Point confronts Union Point, and



Sentinel Dome, on the plateau above Yosemite Valley, south of Sentinel Rock. On the summit is seen the lone Jeffrey Pine which is shown at large on the opposite page.



Jeffrey Pine on Sentinel Dome. Such outposts of the forest are found on nearly all the bare granite bosses that stud the Yosemite uplands. Startling in life where no life would seem possible, they bore down into the cleavage joints, and draw moisture from the rock itself. Above, they grow slowly, turning their few stocky limbs eastward with the prevailing winds. The heroic tree shown here is doubtless several hundred years old, though hardly more than twenty feet high.



Aspen Forest at Lake Merced. The finest grove of Aspens in California. The large trunk at the right shows scratches from the claws of mountain lions, which delight in climbing these trees. The Aspen (*Populus tremuloides*) is the most widely distributed of American trees, ranging from the Arctic Circle to Mexico; and with the Black Willow (*Salix nigra*) it monopolizes the distinction of being common to both the Atlantic and the Pacific Coast.

the splendid prow of Glacier Point the projecting pedestal of the Half Dome. In the areas of abundantly fissured rock separating each of these pairs of opposing cliffs from the next, the glacier took advantage of the vertical and horizontal jointing to undermine and cut back the valley walls. Their varying cleavage planes, with the occurrence of smaller unjointed masses, were set out in an infinite variety of gables, pinnacles and spires. Where the jointing was vertical, the ice left the sheer faces of Glacier and Yosemite Points and the Sentinel. Where it inclined, the Three

Brothers, with their sloping steps, resulted. A succession of fissured and massive granites gave us the deeply trenched Cathedral Rocks. Purely local solidity surrounded by a fissile structure is represented in Cathedral Spires and the Lost Arrow, as well as in such clefts as The Fissures and the gap separating Washington Column from the Royal Arches. Much of this detailed sculpture, of course, has been the result of weathering since the retreat of the glacier. To that agency must also be ascribed the splitting off of flat plates from the front of Half Dome, as well as the exfoliation of concentric layers from the top of that and other domes, which, rather than any glacial grinding, is responsible for their rounded form.

Half Dome, the Indian Tis-sa-ack, dominates the upper end of the valley even more finely than El Capitan, Tu-tock-ah-nu-lah, commands the lower. These superb cliffs, perhaps the noblest rocks in the world, withstood the ice as they now endure the storms. Serene and distinguished, they express Yosemite's majesty. "The Colorado Grand Cañon," writes John Burroughs, "is more unearthly, apochryphal; but one could live with Yosemite."



Triple Divide Peak (11,613 ft.), seen from meadows at the foot of Foerster Peak. So called because its snow-fields feed the San Joaquin and two forks of Merced River.

III.

ON THE CALIFORNIA SKY-LINE

I ramble to the summit of Mt. Hoffman, eleven thousand feet high, the highest point in life's journey my feet have yet touched. And what glorious landscapes are about me, new plants, new animals, new crystals, and multitudes of new mountains, far higher than Hoffman, towering in glorious array along the axis of the range, serene, majestic, snow-laden, sun-drenched, vast domes and ridges shining below them, forests, lakes, and meadows in the hollows, the pure blue bell-flower sky brooding them all,—a glory day of admission into a new realm of wonders as if Nature had wooingly whispered, "Come higher."—*John Muir: "My First Summer in the Sierra."*

THE best way to see Yosemite is from the heights. The wonder and pleasure of this experience draws thousands of visitors each summer to Yosemite Point, overlooking Yosemite Falls, and thence to the still higher elevations of El Capitan, Three Brothers (Eagle Peak) and the North Dome; or, on the south side, to Glacier Point, Sentinel Dome and the great outlooks offered by the Long trail and Pohono trail. These comparatively easy ascents should be made on foot by everybody who commands good wind and a fair pair of legs. Others are advised to take horses. It is not well to underestimate either the labor required or the rewards to be obtained. As one rises from the valley, the view develops unexpected surprises; the opposite cliffs rise



Climbing Mt. Clark.

with him; new rock forms are discovered, colossal and unique; near-by proportions and distant perspective alike change with increasing altitude; until, at last, from the summits he beholds at his feet a vaster and more beautiful Yosemite than he has ever dreamed of.

These upland trails are the keys that unlock, not only the secrets of Yosemite Valley, with



Tuolumne Pass,—upper view looking south; lower view, north. Below is seen a snow-field on the slope of Mt. Vogelsang, with advance of Sierra Club pack-train coming into view. Beyond are Rafferty Creek Cañon and Rafferty and Johnson Peaks.

its cliff sculptures, waterfalls and gla-

cial story, but also the greater mysteries of the higher mountains. No one can climb the valley walls, under the clear Sierran sky, and behold the panorama which they unfold of the far-away California sky-line, without hearing the call of those snowy peaks and sunny ranges rising in the east. Splendid views of the High Sierra may be had from Glacier Point or North Dome, and still grander ones from Clouds Rest, east of Half Dome and easily reached by trail from Nevada Fall,—the highest point on the rim of the valley. But distant views are a poor substitute for the real enjoyment of days and nights spent among the lofty passes and fascinating alpine meadows nearer the backbone of the range, with such ascents as may be within



On Lake Washburn at Sunset.



Vogelsang Pass (left) and Vogelsang Peak (11,511 ft.). In the foreground is Vogelsang Lake (frozen), and on the right Fletcher Creek Cañon. This view looks south from Tuolumne Pass.



View South from Vogelsang Pass, looking down the McClure Fork of the Merced to Mt. Clark and the Merced Range.

one's time and inclination. Hence the most important thing about the trails out of the valley is that they invite one on and on, to the grander Yosemite of the far heights.

Visiting the Yosemite Sierra has till recently meant real exploration, but with the good trails now opened to many parts of the Park, one can hardly go anywhere below timber line without



Summer Snow-fields in the Sierra. Upper picture shows party entering Park via Donohue Pass and east shoulder of Lyell. Middle, a view south, near



Foerster Pass, across frozen Lake Harriet. Lower, coasting on snow slope near Foerster Pass, with Merced Cañon and Mt. Clark in distance beyond.



finding sign-boards pointing him to lake or peak or valley. All this is in disregard of the professional climber's fear that his favorite wilds will be rushed by the "mob." The Park administration wisely aims to make this great national playground fully accessible to the general public, as well as to the mountain enthusiast. The "mob," of course, will not follow; but mountain par-



Cathedral Peak (10,933 ft.), from unnamed lake at its foot, on the northwest side, at summit of Cathedral Pass.



Looking up Lyell Fork of the Tuolumne, with Kuna Crest on the extreme left, Potter Point in the center, and Parsons Peak at the end of the ridge beyond.

ties become larger and more numerous every year, and with the establishment of the Sierra Club's lodge and camp at Soda Springs next summer, and the chalets which the government is about to erect at Lake Merced, Tuolumne Meadows and some of the intervening passes, the number of such companies taking the long trails will, happily, soon be multiplied.

There is variety enough in the mountain trails and the districts to which they lead to fill many summers with enjoyment. No season would be long enough to cover all the trails at anything less than a sprinter's gait. Hence it is best to undertake some definite section of the Park, knowing that unforeseen calls are likely to be made on one's interest and time.

Except the old Tioga road, all highways entering the Park lead to Yosemite Village, and end there; travel to the uplands, save for persons relying upon their knapsacks, must be by the horse-trails. The Tioga road is not really an exception. Built many years ago on easy grades to reach the Tioga Mine, it follows up the Merced-Tuolumne divide, and crosses Tioga Pass. East of the Park, it is maintained as a state road; but the western end, long unused and now impassable for vehicles, is simply a



Pack Train at Vogelsang Pass. Mt. Clark is seen in the distance.



Kuna Crest, seen from meadows near Mono Pass.

well-marked, though very rocky, trail through the central zone of the Park to Tenaya Lake and Tuolumne Meadows. It is necessarily traversed in part by those who go north from the valley, whether to the upper Tuolumne or to Hetch Hetchy.

This road could be put in good shape, and connected by a branch road from Aspen Valley with the Big Oak Flat road, at comparatively small cost. When this is done, we shall have a practicable highway, as nearly direct as is now possible, from Yosemite to Tenaya Lake and the Tuolumne country, and forming part of a transcontinental automobile highway. Such a road would be very much used. Next to more hotels, it is the greatest present need of the Park. The government project of a road from Yosemite to Nevada Fall and Little Yosemite, and thence across one of the passes east of Clouds Rest, promises in time to give the Park a magnificent highway by the upper Merced to Soda Springs. But it will probably cost four or five times as much as the other, and, in view of Congressional indifference to "mere scenery," is not likely to be built within a decade.



Mountain Hemlocks (*Tsuga mertensiana*) on east slope of Matterhorn Cañon, where there is a remarkable forest of this most graceful of alpine trees.

Outing parties visiting the High Sierra may now leave Yosemite Village, where camp equipment and supplies, horses and guides are to be had, by one of several trails. The most popular are those by Nevada Fall, Little Yosemite and Lake Merced, in the Merced Cañon, and by Lake Tenaya and the Tioga road to Soda Springs and Tuolumne Meadows. There is also



In Alpine California. Above, Mt. Dana Glacier, seen from the summit, with camera pointing sharply downward to the moraines and snow-covered ice cascades. Below, an arctic pool, not at the North Pole, but in Bloody Cañon.

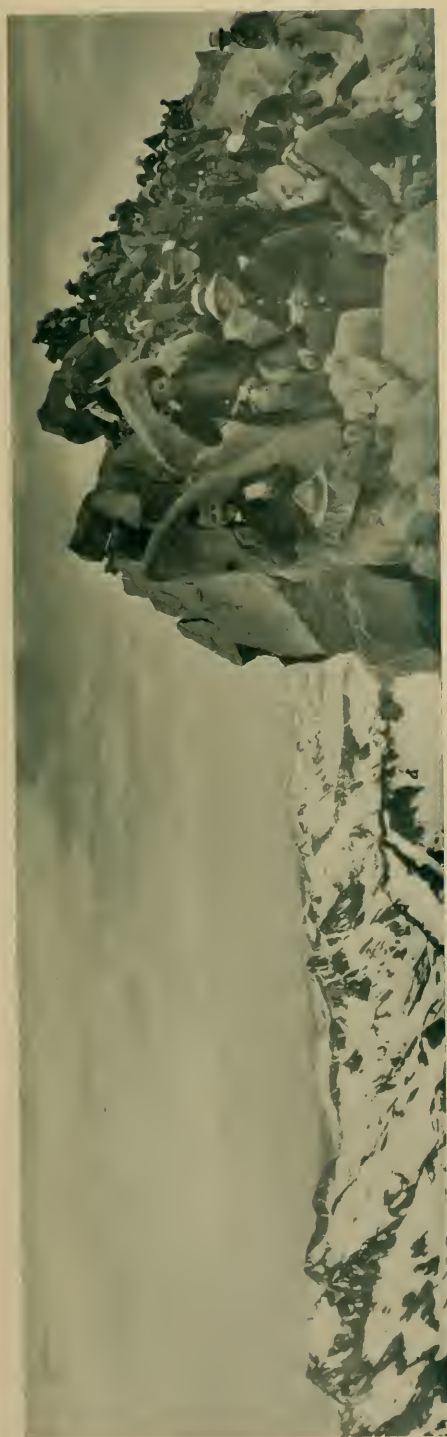


a good trail from Glacier Point south, across the wooded uplands, to the lake country north of Wawona; and, on the north side, a new route continuing the Yosemite Falls trail has been opened to Hetch Hetchy.

The Merced route, besides its branch trails to Clouds Rest, Mt. Clark and the Illilouette head-basin, connects with other well-blazed trails crossing the divide to the Tuolumne through Cathedral and Tuolumne Passes; and also offers access to the entire upper watershed of the Merced River. In this basin, the Merced's branches flow down from cirques and snowfields which form a great horse-shoe stretching from the Merced Range and Triple Divide Peak, on the south, along the crest of the Sierra to the Cathedral Peak Range. Its principal peaks, reaching elevations of twelve and thirteen thousand feet, are Long, Foerster, Electra, Rodgers, Lyell, McClure, Florence, Parsons, and Vogelsang,—a splendid line of snow-fountains, forming a vast amphitheater laced with cañons, and ridged by great moraines of the old Merced glacier. In this wild region, Mr. Muir counted sixty-seven glacier lakes, not



Cutting Steps up the Snow-Finger on Mt. Lyell.



Luncheon on the Lee Side of Lyell Summit. View looking across North Fork of the San Joaquin.



Sierra Club Climbing the North Slope of Mt. Lyell. Donohue Pass is seen below on the left, leading down to the Rush Creek country.



Rodgers, Electra and Davis Peaks, seen from near Island Pass.

to mention scores of others across in the Illilouette basin and on the south side of the Park, in the watershed of the Merced's South Fork.

This whole southeastern section is a favorite haunt of sportsmen, since its lakes and streams are abundantly stocked with trout,—as, indeed, are the waters of the entire Park. Many thousands of young trout have been successfully planted in nearly every stream and larger lake, up to nine or ten thousand feet. Nowhere in America is there better fishing.



A Convenient Crack. Such chance fissures frequently offer the only possible trails across the glacier-polished granite slopes.

Down in Yosemite Valley, the Merced shelters many an educated trout that exhibits only indifference to the lures of the fly-book. But back in the streams and lakes of the higher altitudes, as well as in the less fished waters of Hetch Hetchy, during July and August, even a novice may fill his creel with glittering beauties. The native Rainbow trout (*Salmo irideus*) is widespread in the Sierra. The Eastern Brook trout (*Salvelinus fontinalis*), introduced here from the hatchery near Wawona, has multiplied extensively on the upper Merced, especially in

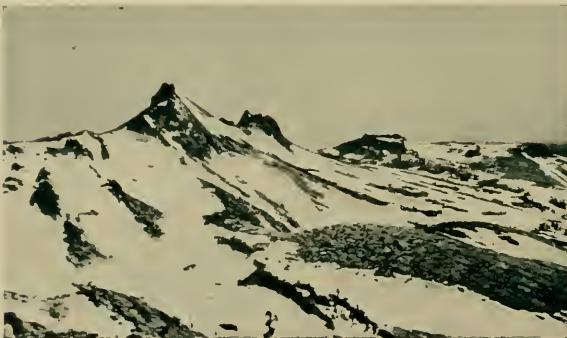


Summit of Mt. Lyell (13,090 ft.). Made in the mountain spring (July), this picture shows the fine north-side glacier still too deeply covered with snow to disclose its characteristic crevasses.



The "Bergschrund" of Lyell Glacier. This German word ("mountain rift") is applied to the great crevasse stretching across the head of every active glacier at the point where its motion begins, and the ice-stream pulls away from the summit snowfield. To the weathering of the slope exposed in such crevasses, through daily thawing and freezing in summer, is chiefly due the head-wall cutting that digs the "cirque" or glacial head-basin far back into the heart of the mountain, and opens passes through the range. This is now recognized as the prime factor in the sculpturing of high mountain districts. The upper rim of a bergschrund often overhangs, as here, in a "snow-cornice."

Merced and Washburn Lakes, and also in the Tuolumne basin. A few Tahoe trout (*Salmo mykiss henshawi*) are also to be taken in the Merced, and an occasional Loch Levin, or hybrids of it with native species, rewards the angler. On the other hand, the wonderfully brilliant and gamy Golden

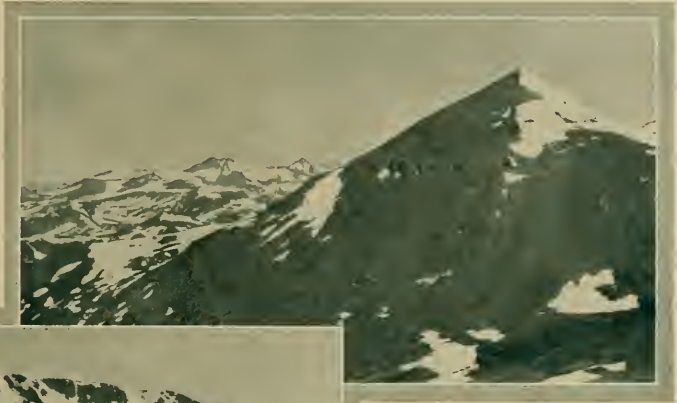


The Uplands in July. View of Echo Peak from Unicorn Peak, with Mt. Hoffman in the distance.

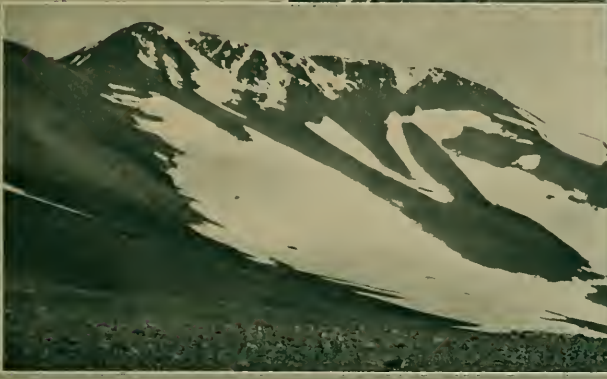
trout of high altitudes in the Mt. Whitney region is not found here. It is to be caught only in the lakes and streams of the southern Sierra, notably in the Cottonwood Lakes, where it is known scientifically as *Salmo aqua-bonita*, and in Volcanic Creek (*Salmo roosevelti*).

For those who mix mountain climbing with their fishing, or *vice versa*,

the snow-peaks that sentinel the Merced amphitheater offer fascinating ascents; and the climber is rewarded with far-reaching views, both of that watershed and of the upper San Joaquin. But the best mountain climbing in the Park is doubtless to be had from Tuolumne Meadows as a base. The way thither from the Merced, by either Cathedral or Tuolumne Pass, is a day's easy march across high country of



Above, Mt. Dana (13,050 ft.), seen from Gibbs. Below, Gibbs Mountain (12,700 ft.), from the Dana-Gibbs saddle.



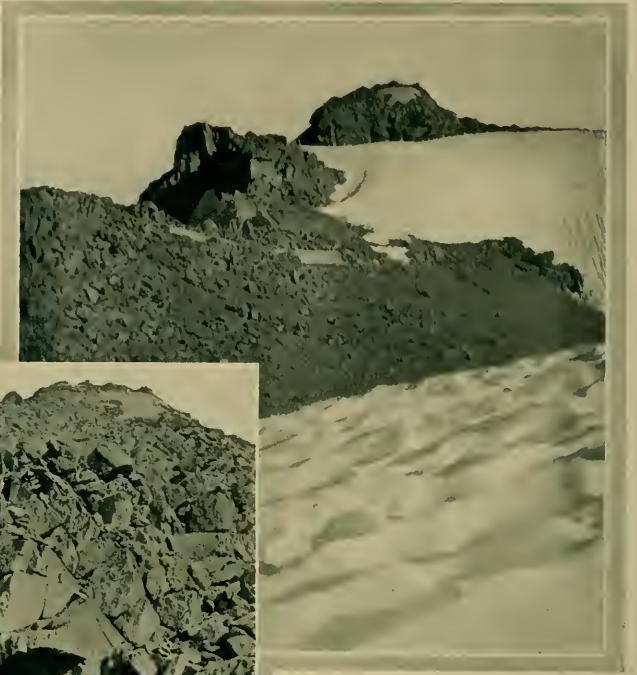
broad, snowy cols and sunny, wind-swept plateaus, dotted with peaks of curious glacial architecture and shining granite bosses,

all burnished by the recent ice. It is country of immense interest, because it is astonishingly new,—so new, indeed, that the rapid disintegration common to altitudes of nine and ten thousand feet under daily interchange of



The Craters of Mono County. This unique volcanic range, which lies in the desert of Eastern California, below Mono Pass, rises 2,500 feet above the near-by Mono Lake. The picture is a winter view from Pumice Valley.

sun and frost has not yet tarnished the landscape. Glacier-polished slopes and benches are common enough on the uplands adjacent to Yosemite and Hetch Hetchy. Here, on the edge of the snowfields, they are everywhere; but hundreds, perhaps thousands, of years younger. How hard it is to take Nature's word for it, that this land of sunshine and gentlest mountain airs, with joyous flowers in every hollow that holds a spoonful of soil, was yesterday a sea of sullen ice!



Summit of Mt. Conness (12,556 ft.). The cliff shown below is the top of a 2,000-foot wall, part of the rim of an ancient glacial cirque.

Yosemite visitors who have the time will find a trip to Soda Springs from the Merced, across one of the high passes, as fine an experience as the Park can give. But the Tuolumne may be reached more

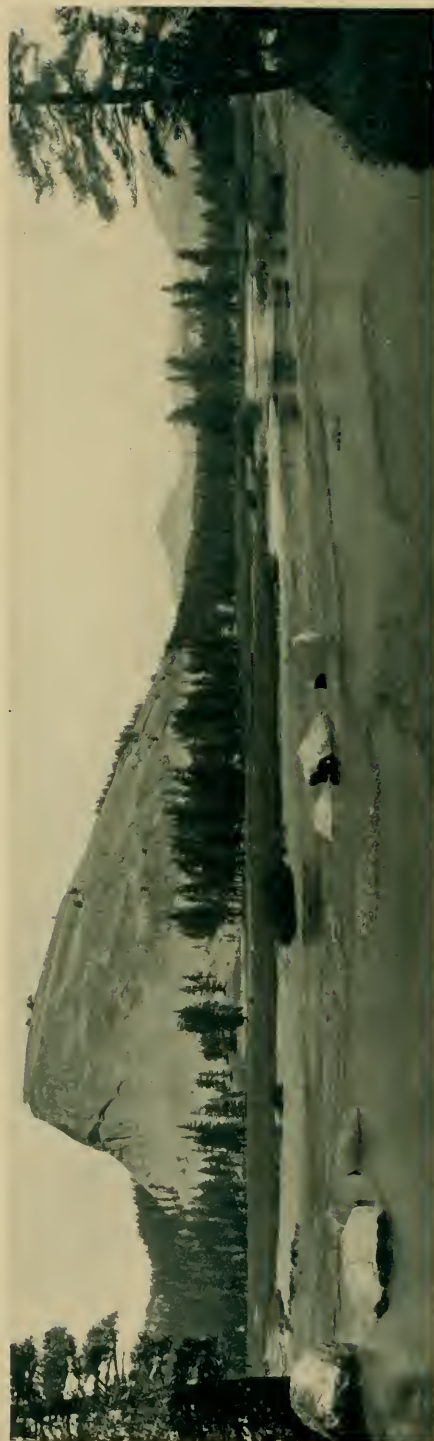
directly from the valley, either by the Yosemite Point trail or by the new Snow-Creek trail out of Tenaya Cañon. Each of these trails soon brings one to the Tioga road, which he follows to Tenaya Lake, and thence northward past Mt. Hoffman and Fairview Dome. This is the region traversed by the south branch of the Tuolumne glacier, on its way to Tenaya Cañon and Yosemite. The cleanness of the country is amazing, and we realize how the mighty ice-stream stripped the whole region bare of its overlying sedimentary rock, and left only the hardest granites.



Cathedral Peak Range, seen from the Tuolumne Meadows. View from junction of the Dana and Lyell Forks of Tuolumne River, showing Fairview Dome on extreme right, with Cathedral Peak beyond. Unicorn Peak is the high mountain on the left.



Tenaya Lake, seen from the old Tioga Road, built many years ago across the Sierra by the owners of the once famous Tioga Mine. East of Tioga Pass this road is maintained by California as a State highway, but west of the summit it is still privately owned, though now within the National Park. This portion has long been unused, but there is a growing demand that it be purchased by the Government and improved.



Lambert Dome and Tuolumne Meadows, with Mt. Dana in the distance. The easy slope on the east or up-stream side of this and other domes, with their sheer west faces, indicates the direction in which the ancient Tuolumne Glacier flowed. Fairview Dome, south of the Meadows, shows a similar incline.



Matterhorn Cañon, seen from its east slope. Matterhorn Peak (12,272 ft.), is on the sky-line at right, and the Saw-Tooth Range in the distance on left of center.

The trails radiating from Tuolumne Meadows bring a score of important peaks, with their glaciers and snowfields, within easy reach of the climber. The story of actual ascents must be left to our illustrations showing some of the adventures of California's great Sierra Club.

Of all high mountain scenes, the glacial head-basins are the most interesting. For they hold the secret of the glacier's method. The fundamental importance of such cirques as makers of mountain landscape was not recognized, even by leading geologists, till the last decade. Much less was it understood that the tool with which the work is done is the "bergschrund," or crevasse across the head of every living glacier, separating the moving ice from the snowfield above (See page 104). That the bergschrund, through its exposure of the head-wall to daily thawing and drenching, and to nightly freezing, plucks huge rocks from the mountain, and so drives the cirque deeper and farther back, till great peaks are undermined and overthrown, and broad passes are cut where two glaciers head together, — this world-old romance of the silent, icy heights is one of the newest nature-stories told by



The Hammond Fly-Catcher.



View East from Benson Pass (10,130 ft.). In the foreground, Wilson Creek Cañon leads down to the Matterhorn Cañon. Eight miles east, Conness Mountain rises at center of the sky-line.

twentieth-century science. So little were these things known a few years ago, indeed, that the famous Scotch geologist, Professor Geikie, could describe the "corries" or cirques of the Scotch Highlands as mainly excavated by "convergent torrents," dropping over their rims! But if Geikie's theory begged the question, it remained for our distinguished American scientist, Dr. Gannett, president of the National Geographic Society, writing as late as 1898, to ascribe the cirque to the avalanches which its steep walls induce:

Glaciers commonly head in amphitheatres or cirques—basins lying under the shadow of the summit cliffs. An amphitheater is surrounded on three sides by vertical walls or steep slopes, down which the ice and snow slide in avalanches. The effect is precisely like that of a waterfall. The falling snow and ice dig a hollow or depression at the foot of the steep descent, just as water does. Such amphitheatres are found at the heads of all glacial gorges in the high mountains.—*National Geographic Magazine*, vol. 9, p. 419.

Dr. Gannett assumed the existence of the "vertical walls" and "steep descent"—the very things his theory professed to account for! But field work by Johnson and Matthes discovered the real cause. It is the bergschrund that digs the cirques and levels the peaks.



Snow Plant (*Sarcodes sanguinea*),—the most curious and brilliant decoration of the Yellow Pine belt, where its scaly stems and fleshy blood-red flowers closely follow the retreat of the snowbanks.



Chiffy Jorgensen

I know a mountain thrilling to the stars,
Peerless and pure, and pinnacled with snow;
Glimpsing the golden dawn o'er coral bars,
Plauding the vanished sunset's garnet glow;
Proudly patrician, passionless, serene;
Virgin and vestal,—O, a very queen!—*Robert W. Service.*

Mt. Lyell and Its Glacier.

The Minarets, Mt. Ritter.

Banner Peak.



Banner Peak (12,957 ft.), Mt. Ritter (13,156 ft.), and the Minarets (12,000 ft.), seen from Shadow Lake (8,700 ft.), east of the range. These peaks are about five miles east of the Yosemite National Park, from which they are separated by the basin of the North Fork of San Joaquin River.

California's mountains crown all her diversified wealth of scenery and climate. The story of her old glaciers is as fascinating as the new life of tree and flower which they have made possible. Under the gentle and unfailing sunshine of the highlands, on one of their broadest alpine meadows, those dauntless explorers, the members of the Sierra Club, led by America's greatest mountaineer, their president, have discovered the very Fountain of Eternal Youth, and proved it no fable, but a fact of the Yosemite Sierra. And what a leader is John Muir! As one talks with him, or reads his books, George Sterling's lines on another great Californian come to mind:

Of all he said, I best recall:
 "He knows the sky who knows the sod;
 And he who loves a flower loves God."
 Sky, flower and sod, he loved them all.

The Sierrans testify their love of the mountains by spending a month each summer among them. This is the sanest and most joyous of sport. It was my privilege for the first time to join the club's large party last July at their camp in Tuolumne Meadows, and there learn how two hundred and fifty men and women, drawn from all the professions, lawyers, teachers and students, doctors, preachers and business men, were able, after a day's climbing, to gather about a huge campfire, and jest away their weariness in club songs:



Nearing the Summit of Mt. Lyell.



Group of 250-foot Sequoias, showing characteristic dome shape of crown when unbroken. The sharp-pointed trees at sides are White Firs (*Abies concolor*).

In the mountains of California,
 We're hitting the trail and shov-
 ing our feet along.

Or, still more pathetically:

There are rocks in the cradle
 where I sleep,
 And roots and cones embed-
 ded deep;
 Aslant I lie upon my bed,
 My feet are higher than my
 head.
 I know I shall not hear the
 "call"—
 My camp is farthest off of all;
 And so I dare not go to sleep,
 While ants and lizards o'er me
 creep.



Piute Mountain, and Lakelet near the head of Sweeney Pass.

Ah! those mountain firesides, after the long marches over the snow-fields, or across the passes, or down the cañons! We were not always frivolous. One evening, a brilliant college philosopher put into crisp English Plato's legacy to modern life. Again, a returned diplomat outlined America's relations with the Orient, and a well-known Hebrew scholar, turning from philology, very delightfully described the birds of Yosemite. Another night, a distinguished scientist from California's great university explained how he told the years of a

trout. "We estimate the age of a tree," said the solemn professor, "by its growth rings. We estimate the age of a horse by its teeth. We estimate the age of a woman by counting ten, and then asking. We estimate the age of a fish by noting the circles in its ear-bones." No wonder those "serious" campfires drew crowds of tired trampers!

This inspiring society is one of the most useful of California organizations. Its intelligent efforts to make the mountain districts of the state better known and more widely enjoyed should have the support of many thousands of Californians, expressed by the payment of its modest membership fee. We complain that the East goes to Europe to see mountains. This will be true until we make our mountains as accessible as are the Alps, and as well known. The Sierra Club is hard at work on that task.



A Typical Glacial Cirque on Kuna Crest. Such a horse-shoe-shaped head-basin is dug by each glacier, using the bergschrund as a tool.



Upper Hetch Hetchy, viewed from Rancheria Trail on north side of Le Conte Point. North Dome is seen on the right, Kolana Rock in center, and Smith Peak on the left, 4,200 feet above the floor of the Valley.

IV.

TUOLUMNE GRAND CAÑON AND HETCH HETCHY

I see an eagle sweep
 Athwart the blue; a gleaming river bind
 In gorgeous braid the valley's golden gown;
 A cataract plunge o'er its distant steep,
 And flutter like a ribbon in the wind.

—Herbert Bashford.

THE Sierra Club discovered the Fountain of Youth, which men have sought for centuries; and having taken possession of it, now plans to guard the treasure well, sharing it, however, with all who may come to drink its sparkling waters and breathe its mountain air. In the homelier language of to-day, this coveted fountain is the "Soda Springs." It is on the north rim of Tuolumne Meadows, a dozen miles by Tioga road from Tenaya Lake, and twice as far from Yosemite Village.

No finer spot could be found for a mountaineers' rendezvous in the High Sierra. The great valley known as Tuolumne Meadows—a filled-up lake basin at the junction of the Dana and Lyell Forks of the Tuolumne River—is about ten miles long and two in width.



Consting on the Polished Granite, at the Waterwheels.



Lower End of Tuolumne Meadows, with Cathedral Peak on the sky-line. The Tioga Road skirts the south side of the Valley, which is also reached by many trails, making it the most accessible point in the northeastern part of the Park, while the important mountains surrounding it make it a favorite starting point for exploration. In the center of this picture is seen the Soda Springs tract of the Sierra Club, 160 acres, including the Springs themselves, at the edge of the wooded moraine north of the river bend. The Club will erect a lodge here. This view is from the summit of Lambert Dome.

On all its sides, the highest mountains of the central Sierra stand guard. Conness, Dana, Mammoth and Lyell peaks are upon the north and east.



Cathedral Creek Falls, the fine cascade by which Cathedral Creek drops into Tuolumne Cañon.

The unique Cathedral Range overlooks it immediately on the south. Lambert Dome rises from its floor, and, still more beautiful, Fairview Dome towers over its lower end, where the river, leaving its quiet meadow reaches, plunges down the vast Tuolumne cañon on its boisterous way to Hetch Hetchy.

Upon this capital site, the club has bought the old Lambert, or Lember, homestead, a quarter-section in the heart of the Meadows, which was preëmpted by John Baptist Lember, a stockman, in 1885, before the creation of the National Park. The tract embraces several fine mineral springs, and with one exception is the only private holding in the eastern section of the Park. The land is part meadow and part hillside facing the mountains on the south. Its central location, with the Tioga road running south and east, and trails radiating to all parts of the Tuolumne watershed, makes it

the natural starting point, either for mountain climbing, or for exploration of Tuolumne Cañon and the alluring region north of it. From it one goes with equal directness across the passes to Mono Lake or west to Hetch Hetchy.

Three or four times, at intervals of three years, the club has made Tuolumne Meadows a base for its summer explorations; and now, on the one hundred and sixty acres which good fortune has enabled it to acquire, it proposes during the coming summer to erect a lodge and establish a camp, thus making Soda Springs its permanent Tuolumne headquarters. Here will be provided simple entertainment, not only for members of the Sierra Club, but also for those of similar associations who may visit the Meadows, and for such others as there may be room to accommodate.

It will be named "Parsons Memorial Lodge," in honor of the late Edward T. Parsons, long a director of the club, and one of its most active mountaineers. Arrangement for accommodations should be made at LeConte Lodge in Yosemite. As the Panama-Pacific Exposition will doubtless bring a host of mountaineers to California, the new camp on the Tuolumne should aid many in exploring the Park.

It is a day's good walk from Soda Springs to the summit of Mt. Dana and back. The Tioga road and Dana Fork are followed to the foot of the mountain, whence the trail climbs the pass between Dana and Gibbs. The ascent from the saddle is short and easy. The summit of Dana commands a view of more snow-peaks, probably, than one can see with so little labor anywhere else on the continent, while a mile down on the east side lie Mono Lake, rimmed with fine mountains, and, south of it, a gray and grim line of volcanic peaks.

From the Dana-Gibbs saddle one day last July,—the only stormy day



Glen Aulin and Wildeat Point, near the upper end of Tuolumne Grand Cañon.



Spermophiles at Conness Creek.



Tuolumne Falls, at the Head of the Grand Cañon of the Tuolumne;—first and most important of the cascades by which this nobly turbulent river, dropping 5,000 feet in twenty-five miles, comes to the quiet waters and lovely wild gardens of Hetch Hetchy.



Grand Cañon of the Tuolumne, seen from its north wall, looking across to the deeply eroded side of Falls Ridge. This vast cutting by glacier and stream extends from Tuolumne Meadows to Hetch Hetchy, twenty-five miles in length and from 3,000 feet to a mile in depth.



Largest of the "Waterwheels," Tuolumne Cañon.

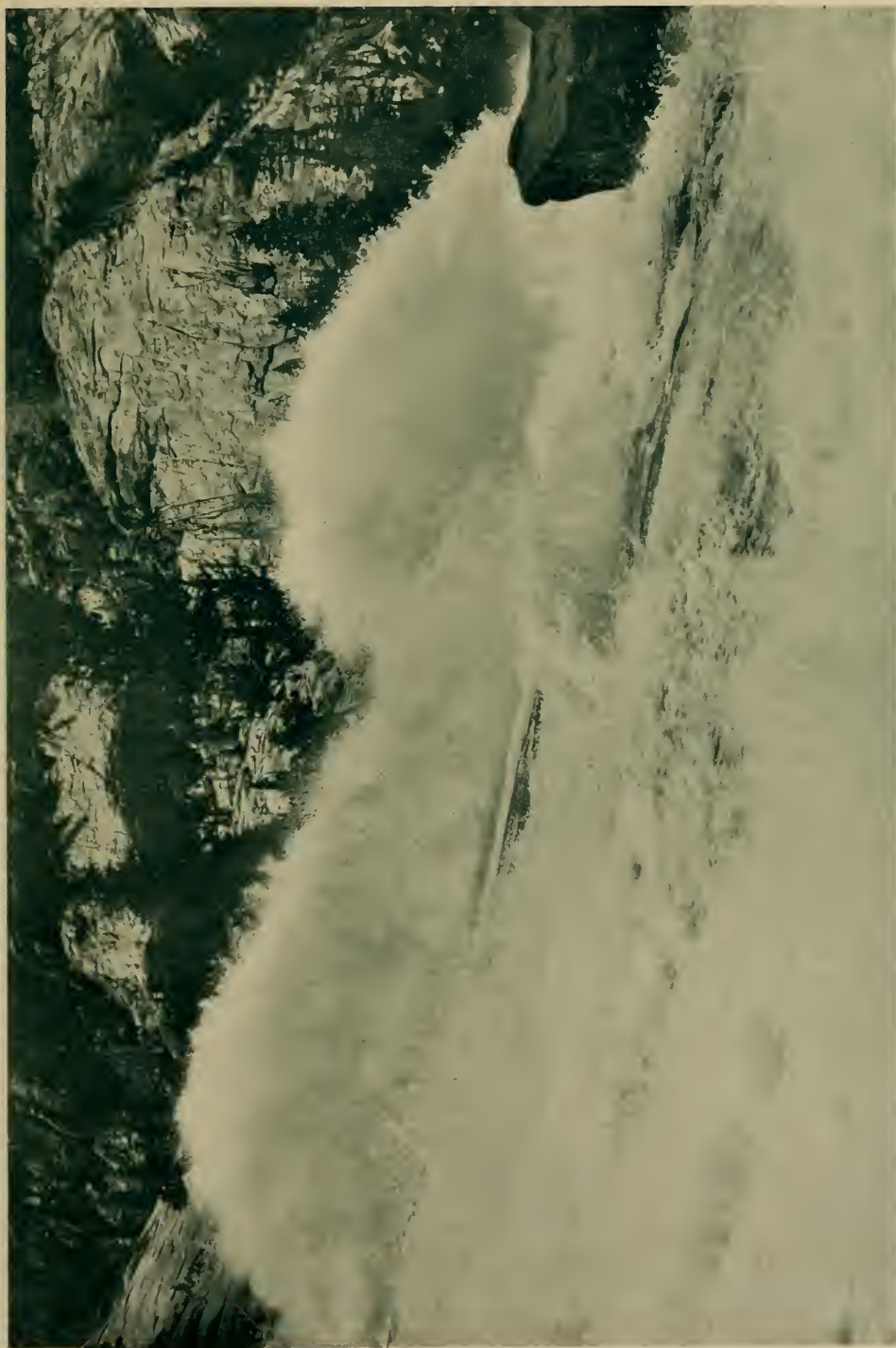
of the Sierra Club outing,—I beheld a scene that can never be forgotten. In Tuolumne Meadows, westward, it was raining lightly; but below us, on the east, a wild thunder-storm swept the Mono Lake basin with lightning and rain. All the great amphitheater seemed filled with the black, solid mass of



A Fair Knapsacker, ready for Tuolumne Cañon trip.

the tempest; but as flash upon flash pierced the darkness, we saw, vivid as day, the breakers beating the shore of the lake, and the trees upon the islands that dot its breast. While this storm blackened the Mono basin at our feet, beyond, stretching far into Nevada, range after range rolled away, waves of a sea of mountains, flashing in the same sunshine that bathed our lofty outlook.

Other peaks are reached from the Tuolumne base with almost equal ease. The trail to Mt. Lyell and its neighbors follows up Lyell Fork, and unfolds a succession of splendid mountain pictures. In other directions, trails lead north to Conness Mountain, remarkable for the sheer walls of great glacial head-basins, and to beautiful Matterhorn Cañon and the Benson Pass country. Those who like still harder climbing may go with the Tuolumne down the whole length of its rough cañon to Hetch Hetchy. The Sierra Club parties commonly divide, as did that of last summer, part taking the trails



Waterwheel Falls, in the Tuolumne Grand Cañon. Here the river, shooting down a smooth granite flume, strikes several bowl-shaped depressions formed by the erosion of comparatively soft spots in the rock, and is hurled far aloft, thirty to forty feet at high water, in the remarkable "wheels" shown above.

across the uplands, the rest choosing the pathless river gorge. The former route offers the inspiration of wide views from the heights; the latter, the zest of a long scramble across huge boulders and polished benches, around frequent cascades, and over the walls of such impassable box-cañons as Muir Gorge. The cañon of the Tuolumne is one of the deepest and wildest

glacier-troughs in the world. Its walls rise to heights of a mile above the mad river, with constantly changing interest in their sculpture.

The falls of the Tuolumne are nowhere compara-



Benson Lake, one of the most picturesque of the Park's alpine lakes. The inlet is seen above; the outlet below.



ble in altitude with Vernal or Nevada Falls, but they have the fascination of infinite variety and the impressive power of repetition, while their setting, at the bottom of this truly grand cañon, is far more stupendous and wonderful than that of the great Merced cataracts. For twenty-five miles of cascades, rapids, sheer falls of considerable drop, and delightful glacial tarns, the wild river plunges down a path so narrow and difficult that to follow it two or three miles is sometimes a day's work for a party of experienced climbers. Even these climb over and around Muir Gorge, rather than risk their lives in its deep flume.

Camping at Conness Creek basin, below the splendid Tuolumne Falls,

and at the foot of the noble White Cascade, most of the Sierra Club party in July went down the cañon as far as the Waterwheel Falls. These surprising water forms are found where the turbulent river, shooting down smooth inclines at furious speed, drops into spoon-shaped depressions caused by the erosion of soft rock. The water is hurled aloft, twenty to forty feet at different stages of the stream, and



Cookstoves on the march. Part of the Sierra Club's commissary in motion.



Rodgers Lake. View looking down from the trail to Benson Pass. This fine alpine lake is a favorite camping spot of the Sierra Club and other parties exploring the north side.

the backward action of the spray gives a good imitation of a wheel revolving with great velocity.

Returning to Conness Creek, we took the high trail up the fine Cold Creek Meadows, and across Virginia Cañon, thence climbing an unnamed pass to reach Miller Lake, and late in the day descended through a noteworthy forest of mountain hemlocks to our night's camp in Matterhorn Cañon. Matterhorn Peak and the cañon are worth seeing, but the next day, after we had climbed the long trough of Wilson Creek to Benson Pass, and then ascended the hills overlooking the pass at an elevation



In the Heart of the Tuolumne Grand Cañon. The lower view shows the entrance to Muir Gorge.

of about 10,500 feet, a wonderful array of mountains, cañons, valleys and lakes swept majestically from Conness on the east around the circle to Rancheria Mountain and the blue deeps of

Tuolumne Cañon in the southwest. Everywhere the vast amphitheater told of its ancient inhabitants, the glaciers, now long vanished, but proclaimed in the clean-cut cirques, deep-set glacial lakes, and silvery waterfalls dropping from hanging valleys high on distant cañon rims.

Descending from Benson Pass, the trail wound round Volunteer Peak, past Smedberg Lake, and in the sunny afternoon brought us to camp on



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Mulr Gorge. View from its lower end, looking up the Tuolumne. Half a mile above this point the river contracts into a race-like stream, hemmed in by the precipitous walls of a box cañon, impassable save at lowest water. Only a few daring climbers have ever made the trip.



Little Hetch Hetchy, a mile above the main Valley; Kolana Rock in the distance.

more the following morning, when the trail led us westward to Rancheria Creek. The descent into its cañon brought us to its charming falls, and finally to the Mecca of our pilgrimage, lovely, famous, fought-over Hetch Hetchy.

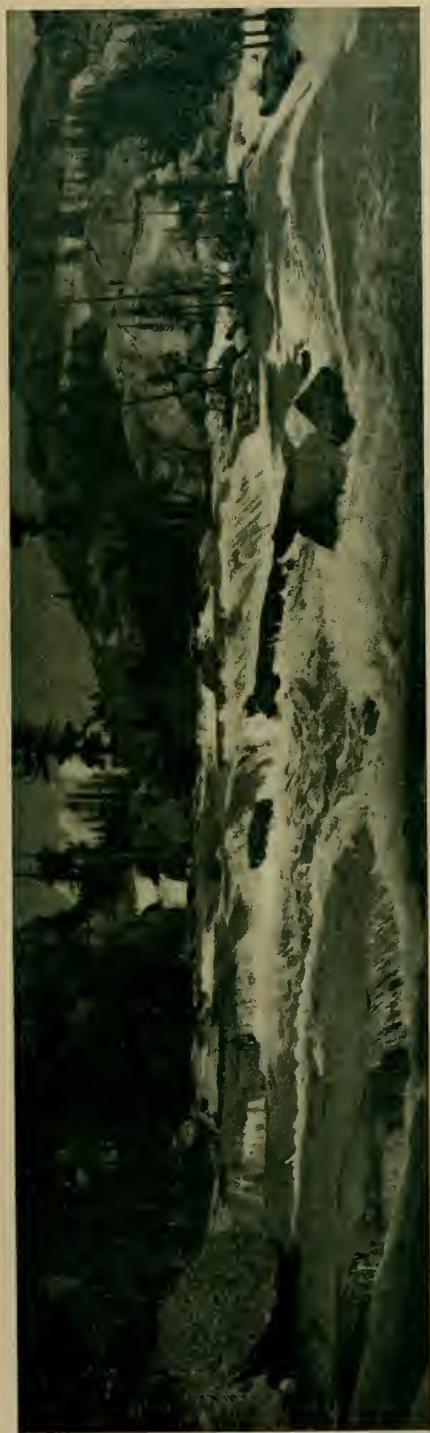
This book is not a brief for or against the San Francisco power and water dam. Enough has already been said on both sides of that controversy that were better left unsaid; and although I have been heartily with those who opposed the commercializing of any of our too few national parks; who deemed Hetch Hetchy, properly drained and made accessible, infinitely more valuable, even to California, as a park than it can ever be as a reservoir for water that is obtainable elsewhere; and who saw behind the call for increased water supply a

Rodgers Lake, the queen of all the lakes, on the north side of the Park. Leaving this camp the next morning, abandoning the delightful lake shore was a hard parting. But the day brought new wonders in the great views it gave us of Tuolumne Cañon, as the trail skirted its north wall. Camp at night at Pleasant Valley in Piute Cañon was followed by the long ascent of Rancheria Mountain, the next day, through forests of red fir (*Abies magnifica*) that were a joy to see. These stately trees justify Chase's enthusiasm: "If I were called upon to choose the one among the conifers that I would live and die by, I should choose the red silver fir, with no fear of ever wearying of its sublime companionship."

Reaching camp on Rancheria early in the afternoon, we had more glimpses down into the Tuolumne abyss, and still



Welghing the Dunnage. This ceremony precedes each day's march on a Sierra Club outing.



Waterfalls and Cascades in the Tuolumne Grand Cañon.



River, Meadow and Forest in Hetch Hetchy. Here the peaceful Tuolumne presents a striking contrast to its turbulence in the cañon above. The trees are mainly black oaks and yellow pines.



Sunrise in Hetch Hetchy.

vast municipal power project, and questioned the propriety of Congress endowing such an undertaking with public property worth many millions; nevertheless I recognize that many conservative and disinterested Californians, both in and out of San Francisco, hold the opposite view, believing that the conversion is necessary, and that it need not close the Tuolumne watershed, or preclude the establishment of sanitary camps and hotels for visitors who may wish to explore the Tuolumne highlands. The issue has been fought in good faith, and to a finish. Congress has acted sincerely in the belief that the necessities of this case transcend the danger of a possibly troublesome precedent. Its action, unless repealed, settles the question so far as the country at large is concerned; the matter now rests with the courts and people of California. I have room only to point out the fact that those who would know Hetch Hetchy must see it before it ceases to be the unique

and glorious vale it is to-day. The Yosemite Park contains many lakes as fine as this will be; it has only one Hetch Hetchy.

If there were no Yosemite, Hetch Hetchy would doubtless be the most celebrated valley in America. But it is misleading, though easy, to describe it as merely a minor edition of the more magnificent cañon. The resemblances, of course, are startling. Sheer gray walls of granite, marked with "royal arches," crowned with domes, and hung with splendid waterfalls, rim a similar level valley floor. This records the filling of an ancient glacial lake, which is still more plainly recalled in the rock sill at its lower end. Here the Tuolumne, after flowing lazily for



Unnamed Lake in Eleanor Cañon, at the foot of the overhanging rock shown on page 134.



"The Twins," a splendid double tree in the Tuolumne Grove.



In Mariposa Grove.

Thy giant brood, . . .
Children of elder time, in whose devotion
The chainless winds still come and ever came
To hear an old and solemn harmony.
—Shelley.

three miles amidst meadows and forests, is cutting a narrow box cañon, too shallow as yet to save the valley from annual inundation by spring floods. Freed thus from unwonted restraint, the impatient stream resumes its role as a cañon torrent, and bounds wildly away to join the San Joaquin.

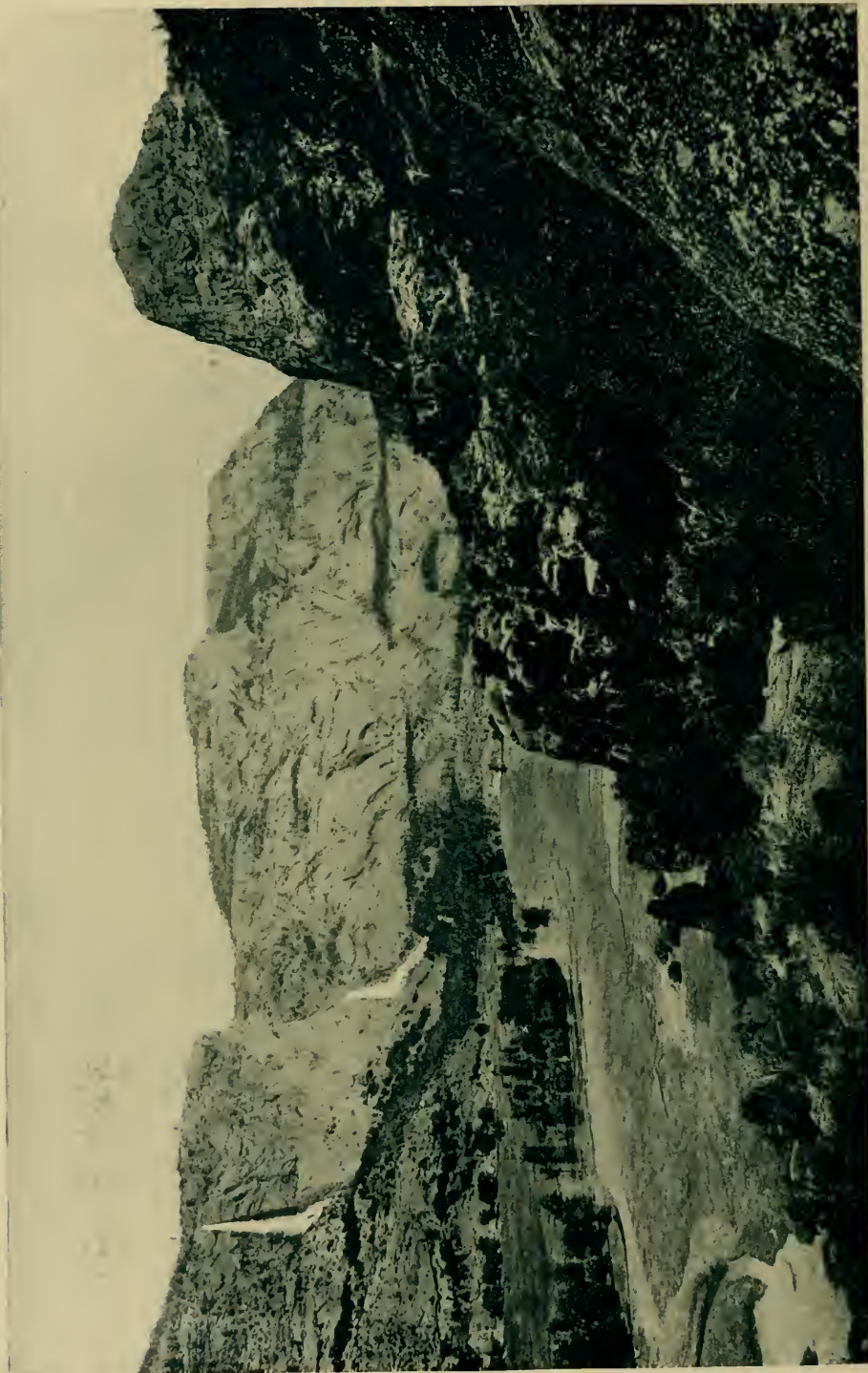
But Hetch Hetchy has a character and atmosphere all its own. It lies five hundred feet lower than Yosemite; it is only half as long and wide, with walls two-thirds as high. The smaller cañon is warmer, sunnier, more gracious. Its beauty is less appalling, but so much more intimate and lovable that save for the formal resemblance



Five-Finger Falls, in Rancharia Creek, Hetch Hetchy.



Lake Eleanor, five miles northwest of Hetch Hetchy. This beautiful mountain-walled lake, enlarged by a dam at its outlet, will form part of the San Francisco water system.



Central Hetch Hetchy, the Yosemite of the Tuolumne. View from Surprise Point on the south trail. At the middle of the south wall (right), Kolana Rock rises approximately 2,000 feet. Opposite are two fine water falls, Tucculala and Wapama, with the Hetch Hetchy El Capitan (1,900 ft.) between them. Beyond is North Dome (2,400 ft.). The likeness of this famous but little known cañon to the still grander Yosemite of the Merced is seen in its sheer walls, with their cataracts, "royal arches" and domes; its level, filled-lake floor, and its winding river, bordered with flowery meadows and groves of splendid pines and oaks.



Upper Hetch Hetchy, seen from the bench of the north wall. The foreground shows the Valley at its least width. Its elevation above sea level is 3,660 feet. On the left, beyond the foot of North Dome, it widens to meet the canyons of Till and Rancheria Creeks; Rancheria Mountain forms the distant sky-line. Hetch Hetchy ends where Le Conte Point, the conical mountain in the middle distance, cuts off Little Hetch Hetchy beyond, crowding the Tuolumne River against the foot of Smith Peak, the long slope of which rises east of Kolana Rock on the right.



Yellow Pines (*Pinus ponderosa*).

and contiguity of the two valleys, a reader of mountain character would hardly compare the gentler graces of Hetch Hetchy with the stupendous grandeurs of Yosemite.

The walls of Hetch Hetchy, imposing in their height and sculptured forms, will make a very splendid frame for the restored lake. Its two great waterfalls, with the cascades in the branch cañons of Rancheria and Till-Till Creeks, so far as not buried by the rising waters, will always be among the most beautiful in the Park. But its valley floor, with all the splendor of mountain flowers and stately forests, will be overwhelmed. No lake can ever compare with such a valley, or make up the loss of such groves of pines and oaks. Black oaks dominate this valley floor, just as the yellow pines are su-

preme on the floor of Yosemite. Taller than the live oaks, with vast crowns of bright deciduous foliage, they form here the noblest oak groves I have ever seen; and I advise my readers who love beautiful trees to see these great oaks, and walk among them, and bathe in the cool Tuolumne beneath their spreading shade, before it is too late.



Overhanging Rock at Eleanor Cañon. This little known cliff rises two thousand feet or more above one of the most beautiful lakes in the National Park.



Lower Hetch Hetchy, seen from the Lake Eleanor Trail. The dam which will impound the Tuolumne for San Francisco's water and power supply is to be erected at the end of the meadows, where the hills come together, forming a box canon less than a hundred feet wide. It will have a height of 350 feet, throwing the waters back for seven miles, and flooding both Hetch Hetchy and Little Hetch Hetchy Valleys. Around the lake thus formed, it is proposed to build a fine automobile road.



A Contemporary of Noah. The famous "Grizzly Giant," patriarch of the Mariposa Grove, has watched the career of man upon the earth for at least forty centuries. It is one of a few very aneient trees found in the several groves, and believed to be survivors of a former generation of Sequoias,—doubtless the oldest of all living things. This venerable Big Tree is thirty feet in diameter; its largest limb is six feet thick. Its height, 204 feet, however, is less than that of many younger trees, the storms having destroyed much of its crown. It shows few signs of senility, and may live many centuries more.



Cavalrymen at the Cabin in Mariposa Grove. For many years the National Park has been policed by a detail of United States cavalry, and its Superintendent has been an Army officer. This system, however, has been changed by the present Federal administration to one of civilian supervision.

V.

THE "KING OF THE FOREST"

In terraced emerald they stand
 Against the sky,
 Each elder tree a king
 Whose fame the wordless billows magnify.
 —George Sterling: "An Altar of the West."

THE crowning glory of the Yosemite country is its forests. Of these the three groves of Big Trees (*Sequoia gigantea*), especially the great Mariposa Grove, reached by way of Wawona, represent the climax of plant life. To leave the Park without seeing them is unthinkable.

The Yosemite forests begin with the magnificent yellow pines and incense cedars (*Libocedrus decurrens*), as well as black and maul oaks, which do so much to soften and adorn the deep, wide valleys on the Merced and Tuolumne. Whether we look down on these notable forests from the valley walls, or walk among their



A Fish Story from Laurel Lake. One day's catch of a party of sportsmen.

fine trees, we quickly recognize that, unparalleled as is their setting, they are worthy of it.

Quitting the valleys for the uplands, we soon find the yellow pine yielding in number to the great sugar pine of California and southern Oregon. On the plateaus above, first place is taken by white fir (*Abies concolor*), and held up to about 7,500 feet, where the still more imposing red fir (*Abies magnifica*) supplants it. Each of these typical Sierran trees forms large and delightful forests in many parts of the Park. Along with



Wawona Meadows and the South Merced Valley, seen from Wawona Point, near the Mariposa Grove.

red fir, Jeffrey and mountain pines are found, to the nine thousand foot level and beyond, where the graceful mountain hemlocks dwell, and the tamarack or lodgepole pine (*Pinus contorta murrayana*) takes up its task of covering the thinnest soils with gaunt forests that seem to belong to the stern, new landscapes. On the highest ridges, outposts of stunted white-bark pine (*Pinus albicaulis*) march with the hardiest alpine flowers to the very snow-line. But it is the Sequoia which, in interest and importance, rises immeasurably above the Park's other forest wealth, peerless among all growing creatures of the soil in age and size, and equally preëminent in beauty and distinction.

Would you know what the famous Big Tree really is, how it outlives all its forest comrades, enduring by the pluck that meets calamity with a laugh? A volume of botanical data would tell less of its habits, its virility, than one may learn by seeing a single example of Sequoia well-doing. Let us visit the little Tuolumne Grove, on the west boundary of the Park. This contains only thirty trees, among them some of colossal size and perfect proportion. But we have come to see a burnt and shattered stump that sets forth the virtues of its clan more bravely than any

of its comelier peers. It is the so-called "King of the Forest."

Among my boyhood friends was a worthy but broken old man. In earlier years he had served his community well. Then misfortune and ill health dealt him a cruel slap, and his kindly heart took on a veneer of eccentricity. He became a village "character." His neighbors, loving him but knowing the twist, put him gently by as a negligible "back number." But when a test came that tried the soul of our town,



Red Fir (*Abies magnifica*), on Rancheria Mountain.



"Alabama," in the Mariposa Grove. Its typical dome-shaped crown indicates that it has been exceptional in thus far escaping damage by storm.



Maul Oak (*Quercus chrysolepis*), on Wawona Road. This familiar tree, also known as "Cañon Live Oak," "Gold-Cup Oak," etc., is common on hillsides and cañon walls in the lower half of the Park, and covers the talus and rock ledges of Yosemite and Hetch Hetchy with low-spreading evergreen foliage.

it was "Old Ben," the superannuate, whose fiber and courage saved the day.

The forest life, too, has its crises; it provides tests of the hardest. And as human wrecks often regain their footing and make good, so a tree that by all signs is down and out, like an obsolete and seedy politician, or king discrowned, —may not it "come back"?

Originally our tatterdemalion "King of the Forest" was one of the noblest Big Trees. It had a circumference of nearly a hundred feet. Its height was doubtless three hundred. Its crown was worthy of a monarch of giants. Around it the tides of ordinary tree life rose and fell. Pines and firs, the sturdy commoners

of the forest, spanning out their little generation of three or four centuries, came and went. But His Sequoia Majesty ruled on. For two thousand years, or even three, it was the pride of its stately grove.

Then came disaster that would have wiped out any other tree. Fire destroyed one side of it, and ate away its heart. Of the huge bole there remained hardly a half cylinder of sound wood and thick cinnamon-colored bark. The crown fell, but this charred fragment stood, ninety feet of hollowed stalk, still flaunting two or three scorched and ragged little limbs. It seemed merely a lopsided and ludicrous monument to departed grandeur. Surely even a forest king, in such plight, might yield without dishonor, and returning to the soil await reincarnation in another age of Big Tree life. But not the unconquerable Sequoia. Blood will tell! So long as a sound root remained, and sap still flowed, this "King" would be no less than kingly.

Mustering its diminished resources, the stricken monarch held its ground. It is the Sequoia way, if a tree



Mariposa Lily (*Calochortus venustus*).

be weakened by fire, to clutch the soil more broadly than before. Thus, here, the few remaining roots were sent farther out, and new stores of nourishment drawn upon. But it must do more than feed. It is a tree's office to be beautiful. It is a king's right to wear a crown. So now the surviving



"King of the Forest," a mere shell, left by fire, of what was once the monarch of the Tuolumne Grove; now making an heroic effort to rebuild its crown, and get a new start in life. The three figures at its base show that its diameter was about thirty feet. The fine tree in the foreground below is a six-foot Red Fir (*Abies magnifica*).

branchlets are cheerily turning upward,—also after the habit of the species when, crushed by lightning or storm, it quickly

rebuilds its top; and one of them has already taken shape there, far aloft, as a symmetrical young tree, undaunted by adversity, and fighting for its share of air and sunshine. Thus would the living skeleton hide its shame by grace of new foliage. Here's wishing it luck! Royal endurance merits homage. Long may so kingly a forest "character" play a part in the tree world! An eminent expert, famous for his knowledge of mankind, once



Three Veterans,—the "Haverford" and "Ohio" trees in the Mariposa Grove, and Galen Clark at the age of 95. This is said to be the last picture of the celebrated "Guardian of Yosemite," who died a year later, in 1910. The "Haverford," named for the college in Pennsylvania, illustrates the Indian practice of using Big Trees as back-logs for fires. Although its core was burnt away, leaving a cavern that is reputed to have sheltered seventeen horses and their riders, its remaining roots have reached out the more stoutly for nourishment, and are supplying ample sap to stalk and crown.

declared: "Skin for skin, yea, all that a man hath will he give for his life." This Sequoia King, more than human in its tenacity, is a veritable Job of the forest. Its faith forbids death. Better to keep on growing against odds, better to live even as a misshapen cripple, showing what humble beauty it may, than to stand a black and rotting shell where once it reigned Sovereign of the Woods! Truly, it is not alone in the Forest of Arden that we

Find tongues in trees, books in the running brooks,
Sermons in stones.

NOTES

Transportation, Hotels, Camps, Guides, etc.—Yosemite Valley is about 150 miles due east of San Francisco. It is reached by either the Southern Pacific or the Santa Fe Railway to Merced, 145 miles by rail from San Francisco and 330 from Los Angeles; by the Yosemite Valley Railroad from Merced, 78 miles, to El Portal, just outside the National Park boundary, and by automobile stages from El Portal to Yosemite village, 12 miles. Round-trip tickets from San Francisco to Yosemite, \$22.35; from Los Angeles, \$31.20. Sleeping-car berths, \$2.50 each way.

Del Portal, the Yosemite Valley Railroad's hotel at El Portal, is more than a stopping place on the way to Yosemite, as it offers excellent accommodations for sportsmen hunting or fishing in the near-by mountains, or tourists visiting the Merced and Tuolumne Sequoia Groves. Hotel Rates, \$4.00 per day, or \$22.50 per week, upwards. Automobile round trip to the Big Trees, made in one day, \$7.50.

Tourist accommodations in Yosemite are provided at present by the Sentinel Hotel and three large permanent camps. While a larger and modern hotel is promised by the Park administration for the season of 1915, the Sentinel Hotel, opposite Yosemite Falls, W. M. Sell, Jr., manager, gives good service at the prices charged, \$3.50 to \$5.00 a day, or \$23 to \$30 a week; for two persons in a room, \$3.00 to \$4.00 a day, or \$20 to \$25 a week. Camp Ahwahnee is situated at the foot of Sentinel Rock. It is well managed by W. M. Sell, and offers an excellent table with clean, roomy floored tents at \$3.00 to \$3.75 a day, or \$17.50 to \$22.75 a week. Camp Lost Arrow, near the foot of Yosemite Falls, W. M. Sell, Jr., manager, is a popular resort at \$2.50 a day or \$15 a week.

Camp Curry, D. A. Curry, proprietor, at the upper end of the valley, is the largest and best known of the camps. Its structures include offices, dining rooms, steam laundry, bakery, bath house, swimming pool, etc. Comfortable tents are provided for 1,000 guests. Rates, \$2.50 a day, or \$15 weekly. At Glacier Point, overlooking Yosemite and Little Yosemite, W. M. Sell, Jr., conducts a hotel and camp. Rates, \$2.50 to \$4.00 a day.

Free sites are designated by the Superintendent in different parts of the valley for parties wishing to establish temporary private camps. Cut firewood may be bought from the Superintendent. Tents, camp outfits, groceries and other supplies, as well as outfits



Del Portal, the Yosemite Valley Railway Company's attractive hotel at El Portal.

for High Sierra trips, are obtainable from the well-stocked general store of W. D. Thornton in Yosemite. Thornton's store is also the post office. A bakery and confectioner's shop, meat market, laundry, telegraph and express office, with several photographic and art studios, will be found in the village.

Carriages from the hotel and camps to all parts of the valley, and horses and guides for the trails, are supplied by J. W. Coffman, under regulation of the Superintendent, at whose office the authorized rates may be obtained. Arrangements and prices should be made in advance through the hotel or camp management.



Camp Curry, delightfully situated among the pines at the foot of Glacier Point one mile from Happy Isles. This is the largest of the tourist camps in Yosemite Valley. The little Douglas squirrels are common throughout the Park.



Wawona and the Mariposa Grove.—Transportation from

Yosemite to Wawona, 26 miles, and thence to the Mariposa Big Tree Grove, is by the automobile stages of the Yosemite Stage and Turnpike Company. Rates, Yosemite to Wawona, \$6.50, round trip, \$13; Yosemite to Mariposa Grove, \$7.50, round trip, \$15. Transportation, Yosemite to Glacier Point by stage, via Inspiration Point and Chinquapin, \$6.50 each way. At Wawona, the Wawona Hotel is one of the best kept mountain inns in America; rates from \$3.50 to \$4.50 a day.

Automobiles.—Automobiles are now admitted to the Park. Good roads from Stockton, Modesto and Merced, in the San Joaquin Valley, lead to the west boundary of the Park, connecting with the Coulterville and Big Oak Flat roads. Automobiles are permitted to enter the Park over either of these roads, but east of the Merced Grove they are limited to the Coulterville road as far as Big Meadows, whence they may either proceed directly to Yosemite, or take the new road via El Portal. A fee of \$5.00 is charged for permit. Garage and automobile-camp sites are provided in the valley. For regulations apply to the Superintendent.

Literature.—The useful pamphlet, *General Information Regarding Yosemite National Park*, may be had gratis at the office of the Superintendent in Yosemite Village, or by mail from the Department of the Interior, Washington, D. C. It contains brief notes on the Park and its administration; altitudes, distances, trails, etc.; size of Big Trees in Mariposa Grove; rules and authorized rates of transportation; hotels, camps, and camp-

ing outfits; automobile regulations; and a bibliography of books and important magazine articles. Two other government pamphlets are for sale at the Superintendent's office: *Sketch of Yosemite National Park*, a popular account of Yosemite geology by F. E. Matthes, of the U. S. Geological Survey, price 10 cents; and *The Secret of the Big Trees*, by Ellsworth Huntington, price 5 cents. *Foley's Yosemite Souvenir*, a handy pocket guide, may be purchased at J. D. Foley's studio in the village.

Of the earlier books, Dr. L. H. Bunnell's *Discovery of Yosemite*, 1880, 4th ed., 1911, is the best account of the Indian war of 1851 and the visits of the Mariposa Battalion. The last edition is handsomely illustrated from photographs by Boysen. *In the Heart of the Sierras*, by J. M. Hutchings, 1886, is a history of the valley by one of its earliest residents. Prof. J. D. Whitney's *The Yosemite Guide-Book*, 1871, despite its obsolete theory of the valley's origin, is a very readable and informing essay. *Mountaineering in the Sierra Nevada*, 1871, by Clarence King, who was Whitney's associate in the geological survey of California, is one of the best books inspired by the mountains of the West.

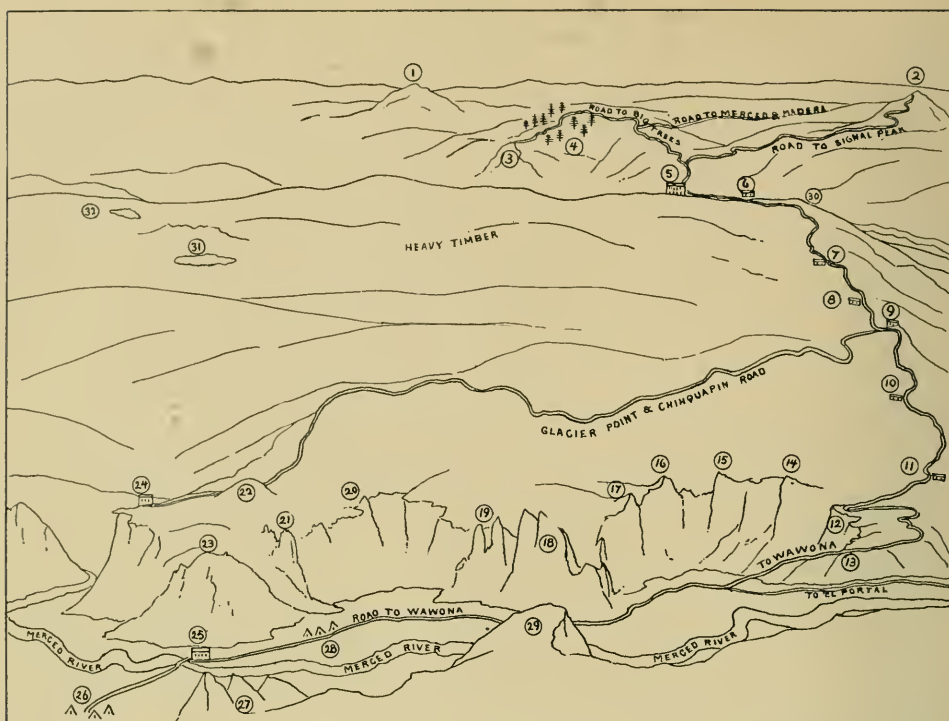
Three booklets, *Indians of Yosemite Valley*, 1904; *The Big Trees of California*, 1907; and *The Yosemite Valley*, 1910, by Galen Clark, discoverer of the Mariposa Grove and long the guardian of Yosemite under the state régime, contain much first-hand information. The fullest and most valuable description of the Park, with its glaciers, past and present; its forests, flowers, birds and animals, is of course, John Muir's *Yosemite*, 1912. Muir's other books, *My First Summer in the Sierra*, 1911; *The Mountains of California*, enlarged ed., 1913; and *Our National Parks*, 1909, are also full of Yosemite. Naturalist and geologist as he is, Mr. Muir, rather than Joaquin Miller, has been the real poet of the Sierra, though he writes in prose. His books are after all not so much treatises on its natural history as delightful interpretations of its spirit. *Yosemite Trails*, 1911, by J. Smeaton Chase, is an enjoyable account of the Yosemite uplands, especially useful on their trees and flowers. Mr. Chase's little manual, *Cone-Bearing Trees of the California Mountains*, 1911, will also be found of service.

The standard handbook on the botany of the Park is *A Yosemite Flora*, 1912, by Prof. Harvey M. Hall and Carlotta C. Hall. Untechnical in style and excellently illustrated, with keys for identifying the trees and flowers, this accurate manual is invaluable for field work. Prof. Willis Linn Jepson's *The Trees of California*, 1909, is well planned for laymen's use, and capitally illustrated. It is not to be confused with his monumental and technical *Silva of California*, published by the University of California. Supplementing these popular handbooks, Sudworth's *Forest Trees of the Pacific Slope*, 1908, published by the U. S. Forest Service, covers the Sierra forests with the same thoroughness given to the rest of its subject.

The nine volumes of the *Sierra Club Bulletin* contain a store of papers by experts, covering not only the Yosemite country, but also the great mountains of the Kings and Kern River basins. These admirably edited publications, with a considerable library of other mountain literature, may be consulted at the Sierra Club's headquarters, the LeConte Memorial Lodge, near Camp Curry. In the general periodicals of this country and Europe, Yosemite and Hetch Hetchy Valleys have received more attention than any other American scenic district, and many noteworthy articles may be found through the periodical indexes and magazine files at the public libraries.



Watching the Sunrise at Mirror Lake.



FROM YOSEMITE VALLEY TO WAWONA AND THE MARIPOSA GROVE.

- | | |
|--|---------------------------------------|
| 1. Mt. Raymond (El. 8,548 ft.). | 17. Dewey Point. |
| 2. Signal Peak, or Devil Peak (7,079). | 18. Cathedral Rocks. |
| 3. Wawona Point. | 19. Cathedral Spires. |
| 4. Mariposa Grove. | 20. Taft Point. |
| 5. Wawona. | 21. Sentinel Rock. |
| 6. Fish Hatchery. | 22. Sentinel Dome. |
| 7. Eight Mile. | 23. Union Point. |
| 8. Eleven Mile. | 24. Glacier Point. |
| 9. Chinquapin. | 25. Sentinel Hotel, Yosemite Village. |
| 10. Grouse Creek. | 26. Lost Arrow Camp. |
| 11. Fort Monroe. | 27. Three Brothers. |
| 12. Inspiration Point. | 28. Camp Ahwahnee. |
| 13. Artist Point. | 29. El Capitan. |
| 14. Old Inspiration Point. | 30. Lookout Point. |
| 15. Stanford Point. | 31. Ostrander Lake. |
| 16. Crocker Point. | 32. Crescent Lake. |

INDEX

Figures in light face type refer to the text, those in heavier type to illustrations.

- "Ah-wah-nee," 36
 Aspen Forest, 92
 Automobiles, 62, 144
 Banner, Mt., 112
 Benson Lake, 122
 Benson Pass, 120, 124, 110
 Bergschrund, 109, 110, 104
 Big Oak Flat Road, 62, 99
 Bloody Cañon, 45, 44, 45, 109
 Bridal Veil Fall, 66, 76, 20, 66
 Bridal Veil Meadow, 63
 Broderick, Mt., 86, 68
 Bunnell, Dr. L. H., 44, 54, 145
 Buttercups, 33
 Camps, Ahwahnee, Curry, and
 Lost Arrow, 143, 144
 Cascade Falls, 65
 "Cataract of Diamonds," 83
 Cathedral Creek Falls, 116
 Cathedral Peak, 30, 107
 Cathedral Rocks, 62, 90, 19, 69
 Chase, J. Smeaton, 63, 145
 Chinnualna Falls, 62
 Cirques, 79, 109, 110, 45, 106,
 144
 Clark, Galen, 145, 59, 74, 142
 Clark, Mt., 82, 7, 22, 31, 68, 83,
 93, 95, 96, 98
 Clouds Rest, 94, 7, 42, 68, 85
 Colby Mtn., 25
 Cold Cañon Meadows, 124, 40
 Colorado Cañon, 25, 92
 Conness, John, 56
 Conness, Mt., 106
 Dana, Mt., 117, 120, 33, 39, 145;
 Glacier, 100
 Domes, 28, 30, 90
 Donohue Pass, 96, 101
 Eagle Peak, 27, 68
 Echo Peak, 104
 El Capitan, 36, 90, 92, 23, 47, 67,
 68; Moraine, 66-72
 Eleanor Cañon, 128, 134
 Eleanor Lake, 131
 Electra Peak, 102
 Fairview Dome, 106, 116, 107, 116
 "Fallen Monarch," 80
 Firs, White, 138, 38; Red, 126,
 138, 139, 141
 Fissures, The, 92
 Five-Finger Falls, 131
 Florence, Mt., 34, 38
 Forests, 29, 32, 34, 131, 134, 137,
 142, 64; see Sequoias
 Gannett, Dr. Henry, quoted, 110
 Geikie, Sir Archibald, 110
 Gibbs, Mt., 117, 33, 105
 Glaciers, 26-32, 67-92, 100, 104
 Glacier Landscape, 22
 Glacier National Park, 25
 Glacier Point, 91, 93, 9, 31, 57,
 75, 76, 88
 Glen Aulin, 117
 "Governor Tod" Group, 32
 "Grizzly Giant," 46, 136
 Guides, 143
 Half Dome, 92, 9, 28, 42, 46, 51,
 60, 64, 68, 73, 86, 87, 88
 Hall, H. M. and C. C., 145
 Happy Isles, 34, 41, 79
 Hemlocks, Mountain, 99
 Hetch Hetchy, 29, 32, 88, 117,
 120-134, 36, 58, 115, 125, 127,
 128, 131, 132, 133, 135
 Hoffman, Mt., 79, 88, 93, 17, 45,
 90, 104
 Illilouette Fall, 82, 78
 Illilouette Watershed, 82, 22
 Indians, Yosemite, 36, 38, 49, 52,
 26, 43, 52, 54
 Inspiration Point, 63
 Jack Main Cañon, 10
 Jepson, Prof. W. L., 145
 Jeffery Pine, 138, 83, 90, 91
 "Jointing," 72, 90, 92, 72
 Johnson, Willard, 110
 Johnson Peak, 94
 King, Clarence, 145
 "King of the Forest," 139-142,
 141
 Kolana Rock, 115, 126, 128
 Kuna Crest, 35, 38, 44, 98, 99,
 114
 Lakes, glacial, 29, 33, 70-72, 100
 Lambert Dome, 33, 108, 116, 108,
 116
 Le Conte Memorial Lodge, 80
 Leopard Lily, 72
 Liberty Cap, 86, 31, 68, 83
 Little Hetch Hetchy, 126
 Little Yosemite, 85, 7, 29, 31, 68,
 83, 85
 Long Mtn., 34
 Lookout Point, 52
 Lost Arrow, 92, 70; Trail, 61
 Lost Fork of Tuolumne, 38, 98
 Lyell Glacier, 104
 Lyell, Mt., 116, 120, 7, 25, 38, 96,
 100, 101, 103, 113
 Lyman, Prof. W. D., 30
 Madera, Cal., 48
 Mammoth Mtn., 33
 Mariposa Battalion, 48
 Mariposa Grove, 57, 137, 32, 37,
 56, 136, 137
 Mariposa Lily, 140
 Matherhorn Cañon, 120, 124, 109
 Matthes, Francois E., 88, 110, 145
 McClure, Mt., 14, 25, 38
 Merced Cañon, 87, 7, 31, 76, 89
 Merced Lake, 85, 98, 103, 89
 Merced River, 25, 64-66, 70, 100,
 52, 61, 64, 68, 69, 79, 138
 Mirror Lake, 87, 53, 145
 Mono Craters, 105; Lake, 117, 44
 Mono Pass, 43, 44, 45, 99
 Muir Gorge, 35, 124, 125
 Muir, John, 36, 58, 93, 113, 145,
 46, 58
 Nevada Fall, 82-4, 31, 68, 82
 North Dome, 28, 34, 42, 51, 67,
 68, 90, 126
 Oaks, black, 134, 70, Maul, 140
 Parsons Peak, 38, 98
 Parsons Memorial Lodge, 117
 Passes, 109, 94, 95, 99, 102, 110
 Phlox, 87
 Pine, Sugar, 138, 40; Tamarack,
 138; Yellow, 137-8, 134
 Piute Cañon, 126; Mtn., 114
 Pleasant Valley, 126
 Pohono, see Bridal Veil Fall
 Polemonium, 43
 Portal, El, 64-5, 143
 Potter Point, 38, 98
 Primrose, Evening, 73
 Rancheria Mtn., 124, 126, 127
 Ranier National Park, 25, 29
 Ritter, Mt., 112
 Roads, 98-9
 Rodgers Lake, 126, 17, 123
 Rodgers Peak, 102
 Roosevelt, Theodore, 58, 46
 Royal Arches, 92, 128, 8, 51, 55,
 68
 Sardine Lake, 45
 Savage, Maj. James D., 43, 48-52
 Seavey Pass, 114
 Sentinel Dome, 90, 91
 Sentinel Hotel, 143
 Sentinel Rock, 92, 21, 47
 Sequoias, 31, 138, 143
 Mariposa Grove, 137, 37, 56,
 80, 136, 137, 139, 141, 142
 Merced Grove, 65, 2
 Tuolumne Grove, 65, 139, 129
 Sierra Club, 98, 109, 113-16, 145,
 7, 11, 14, 80, 122, 123
 Smedberg Lake, 124
 Smith Peak, 115, 127, 131
 Snow Creek Falls, 26
 Snow Plant, 110
 Soda Springs, 98, 106, 113
 Spermatophytes, 117
 Tenaya Cañon, 87, 88, 28, 42,
 49, 51, 54, 59, 68
 Tenaya Glacier, 88
 Tenaya, Indian Chief, 43, 45, 48,
 49, 52-6
 Tenaya Lake, 55, 87, 30, 48, 59,
 108
 Tenaya Peak, 48
 Three Brothers, 54, 92, 27, 67
 Tilden Lake, 29
 Tioga Lake, 39
 Tioga Road, 79, 98, 106, 115,
 116, 45, 108, 116
 Triple Divide Peak, 93
 Trout, 102, 104, 137
 Trails, 93, 100, 106, 109, 144, 88
 Transportation, 143
 Tueulala Falls, 128
 Tuolumne Cañon, 113, 121, 122,
 125, 126, 22, 35, 119, 124
 Tuolumne Falls, 122, 118
 Tuolumne Glacier, 87, 106
 Tuolumne Meadows, 105, 115-120,
 11, 107, 108, 114, 116
 Tuolumne Pass, 94
 Tuolumne River, 25, 25, 127,
 131, 135
 Twin Lake, 29
 Unicorn Peak, 104, 107
 Union Point, 90, 47
 Vernal Fall, 82-3, 31, 68, 77, 81,
 82
 Virginia Cañon, 122
 Vogelsang Pass, 95, 98
 Walker, Capt. Jos. R., 40, 46
 Walker Lake, 44
 Wapama Falls, 128
 Washburn Lake, 86, 103, 34, 94
 Washington Column, 92, 42, 51
 Waterfalls, 29, 33, 76, 79
 Waterwheel Falls, 122, 129, 121
 Watkins, Mt., 87, 53, 68
 Wawona, 61, 62, 143, 62, 63, 138,
 146
 White Cascade, 122, 25
 Whitney, Josiah D., 67, 72, 145
 Wilmer Lake, 10
 Yellowstone National Park, 25
 Yosemite, name, 48
 —Creek, 79, 80
 —Falls, 80, 81, 18, 24, 68, 71,
 72, 75
 —Lake, 70, 71
 —National Park, 17, 22, 26, 56,
 58, 96
 —Point, 90, 93, 68
 —Trail, 18, 46, 68
 —Valley, 29, 32, 61, 65, 72, 4,
 16, 46, 47, 68, 75



The following maps, at the prices given, may be obtained from the Director of the U. S. Geological Survey, Washington, D. C., or at the office of the Superintendent of the Park in Yosemite Village:

Map of Yosemite National Park, $2\frac{1}{2}$ x 27 inches, scale 2 miles to the inch. Price, 50 cents a copy flat; 55 cents a copy folded and bound between covers.

Map of Yosemite Valley, $35 \times 15\frac{1}{4}$ inches, scale 2,000 feet to the inch. Price, 20 cents.

Panoramic view of Yosemite National Park, $18\frac{1}{2} \times 18$ inches, scale 3 miles to the inch. Price, 25 cents.



Drawn by Chris Jørgensen.

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Key to Outline Map of Yosemite Valley and Adjacent Peaks, with Elevations of Principal Landmarks.

NOTE: The elevations given below are from the maps of the United States Geological Survey. These maps do not always agree one with another, and even in the same map slight differences between the legend and bench-mark figures are sometimes found. Such variations, however, are inconsiderable,—never more than a few feet. Where they occur, the authority of the latest map, the "Panoramic View of the Yosemite National Park," has as far as possible been followed.

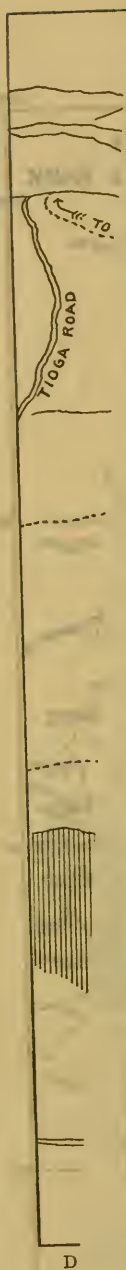
The figures indicate height above sea-level. For height above the floor of Yosemite Valley, deduct 3,960 feet, the elevation of the pier near the Sentinel Hotel. In the case of waterfalls, the height, or "drop," of each is given, as well as its elevation above sea-level.

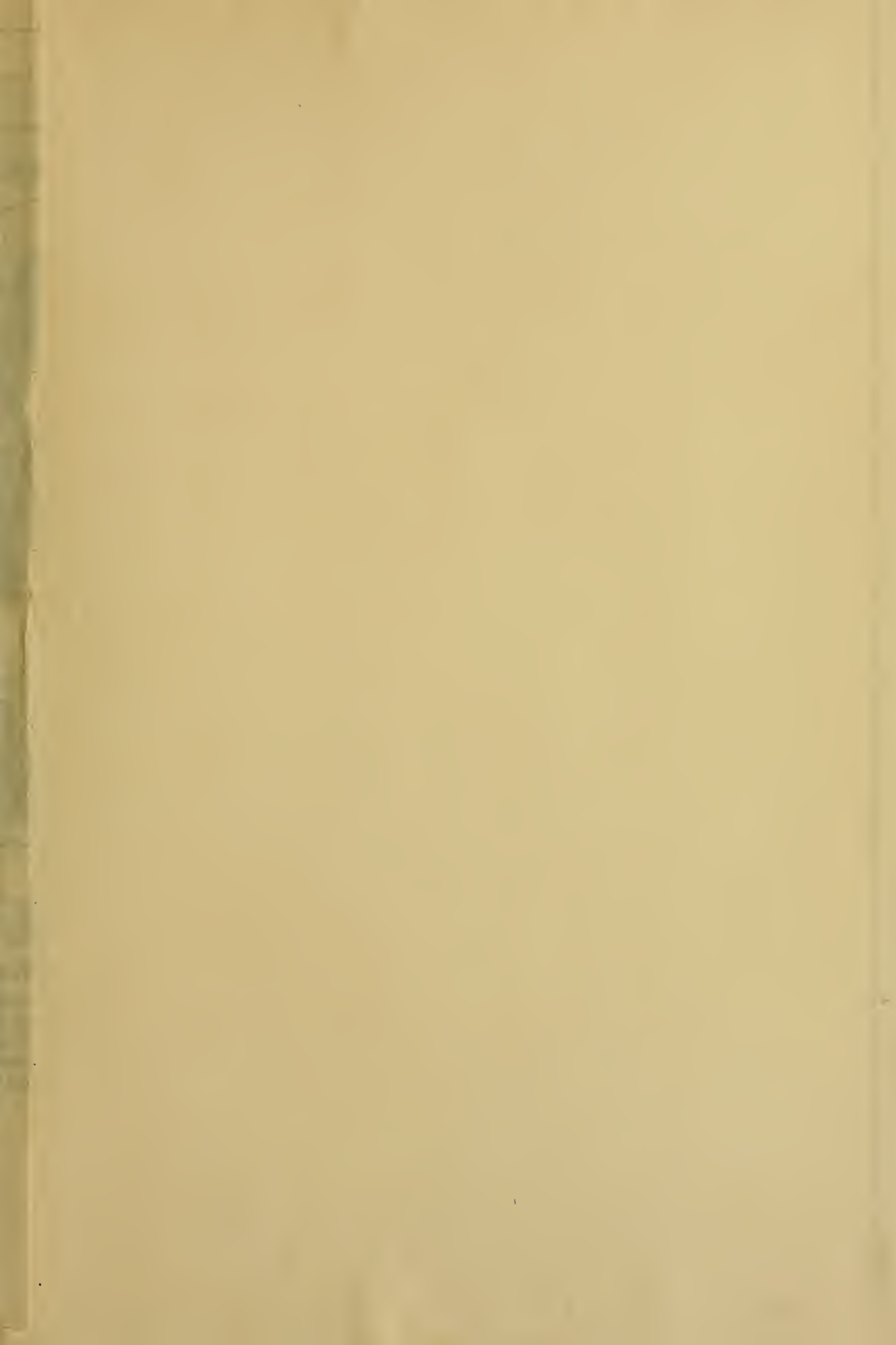
1. Artist Point, 4,701 feet.
2. Inspiration Point, 5,391.
3. Old Inspiration Point, 6,603.
4. Stanford Point, 6,659.
5. Crocker Point, 7,090.
6. Dewey Point, 7,316.
7. Bridal Veil Fall, top, 4,787; drop, 620.
8. Cathedral Rocks, 6,633.
9. Cathedral Spires, 6,114.
10. Taft Point, 7,503.
11. The Fissures.
12. Sentinel Rock, 7,046.
13. Union Point, 6,314.
14. Glacier Point, 7,214.
15. Sentinel Dome, 8,117.
16. Glacier Point Hotel.

17. Vernal Fall, top, 5,049; drop, 317.
18. Panorama Cliff, 6,224.
19. Illouette Fall, top, 5,816; drop, 370.
20. Nevada Fall, top, 5,910; drop, 594.
21. Mt. Broderick, 6,705.
22. Liberty Cap, 7,072.
23. Little Yosemite, 6,150.
24. Mt. Starr King, 9,181.
25. Mt. Clark, 11,500.
26. Foerster Peak, 12,062.
27. Electra Peak, 12,462.
28. Rodgers Peak, 13,006.
29. Mt. Lyell, 13,090.
30. Mt. McClure.
31. Mt. Florence, 12,507.
32. Half Dome, 8,352.

33. Clouds Rest, 9,924.
34. Parker Peak, 12,850.
35. Gibbs Mountain, 12,700.
36. Tenaya Peak, 10,200.
37. Mt. Watkins, 8,235.
38. Indian Rock, 8,526.
39. Basket Dome, 7,602.
40. Leaning Tower, 6,863.
41. North Dome, 7,531.
42. Washington Column, 6,912.
43. Mirror Lake, 4,096.
44. Camp Curry.
45. Kennellyville.
46. Royal Arches, 5,600.
47. Indian Camp.
48. Camp Lost Arrow.

49. Camp Yosemite (Military).
50. Yosemite Point, 6,936.
51. Yosemite Falls: Top of Upper Fall, 6,525; drop, 1,430. Top of Lower Fall, 4,420; drop, 320.
52. Lost Arrow.
53. Three Brothers, 7,773 (Eagle Peak).
54. El Capitan: Brow, 7,042; summit, 7,564.
55. Ribbon Fall, top, 7,003; drop, 1,612.
56. Sentinel Hotel, Yosemite Village, 3,964.
57. Camp Ahwahnee.
58. Garage.
59. Lake Tenaya, 3,146.
60. Dans Mountain, 13,050.





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